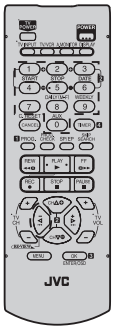
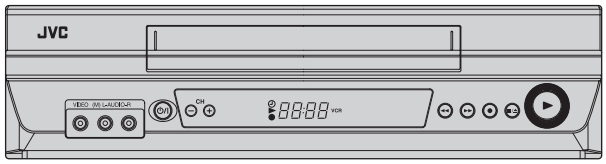
JVC

SERVICE MANUAL

VIDEO CASSETTE RECORDER

HR-J4020UA, HR-J4020UB, HR-J7020UA, HR-J7020UM





HR-J4020UA, HR-J4020UB,
HR-J7020UA, HR-J7020UM [V17C1, V17D0]

VHS N-PAL NTSC (UA model)

VHS (UB, UM model)

SQPB NTSC (UA model)

SQPB (UB, UM model)

Hi-Fi (HR-J7020UA, HR-J7020UM)

For disassembling and assembling of MECHANISM ASSEMBLY, refer to the SERVICE MANUAL No.86700(MECHANISM ASSEMBLY).

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No.YD007
2004/7

SPECIFICATION

	HR-J4020UA	HR-J7020UA	HR-J4020UB	HR-J7020UM
GENERAL				
Power requirement	AC 110 V - 220 V, 50 Hz/60 Hz			
Power consumption				
Power on	14 W			
Power off	3.1 W			
Temperature				
Operating	5°C to 40°C			
Storage	-20°C to 60°C			
Operating position	Horizontal only			
Dimensions (W × H × D)	360 mm × 98 mm × 255 mm			
Weight	2.9 kg			
Format	VHS PAL-N/NTSC standard		VHS NTSC standard	
Maximum recording time				
(SP)	240 min. with E-240 video cassette(PAL-N) 160 min. with T-160 video cassette(NTSC)		210 min. with T-210 video cassette	
(LP)	480 min. with E-240 video cassette(PAL-N)		-	
(EP)	480 min. with T-160 video cassette(NTSC)		630 min. with T-210 video cassette	
VIDEO/AUDIO				
Signal system	PAL-N-type color signal and EIA monochrome signal, 625 lines/50 fields NTSC-type color signal and EIA monochrome signal, 525 lines/60 fields		PAL-M-type color signal and EIA monochrome signal, 525 lines/60 fields NTSC-type color signal and EIA monochrome signal, 525 lines/60 fields	NTSC-type color signal and EIA monochrome signal, 525 lines/60 fields
Recording/Playback system	DA4 (Double Azimuth) head helical scan system			
Signal-to-noise ratio	45 dB			
Horizontal resolution	240 lines(PAL-N)/230 lines(NTSC)		240 lines	230 lines
Frequency range				
Normal audio	70 Hz to 10,000 Hz			
Hi-Fi audio	-	20 Hz to 20,000 Hz	-	20 Hz to 20,000 Hz
Input/Output	RCA connectors (IN × 2, OUT × 1)			RCA connectors (IN × 1, OUT × 1)
TUNER				
Tuning system	Frequency synthesized tuner			
Channel coverage	VHF : Channels 2-13, UHF : Channels 14-69, CATV : 113 Channels			
RF output	Channel 3 or 4 (switchable; preset to Channel 3 when shipped) 75 Ω, unbalanced			
TIMER				
Clock reference	Quartz			
Program capacity	1-year programmable timer/8 programs			
ACCESSORIES				
Provided accessories	RF cable, Infrared remote control unit, Lithium battery - CR2032 -			RF cable, Infrared remote control unit, Lithium battery - CR2032 -, Conversion plug

Specifications shown are for SP mode unless otherwise specified.
E.& O.E. Design and specifications subject to change without notice.

SECTION 1
PRECAUTION

1.1 SAFTY PRECAUTIONS

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold.However,in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

1.1.1 Precautions during Servicing

(1) Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product.When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

(2) Parts identified by the ⚠symbol and shaded ( ) parts are critical for safety.
Replace only with specified part numbers.

NOTE :

Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

(3) Fuse replacement caution notice.
Caution for continued protection against fire hazard.
Replace only with same type and rated fuse(s) as specified.

(4) Use specified internal wiring. Note especially:
- Wires covered with PVC tubing
- Double insulated wires
- High voltage leads

(5) Use specified insulating materials for hazardous live parts. Note especially:
- Insulation Tape
- PVC tubing
- Spacers
- Insulation sheets for transistors
- Barrier

(6) When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

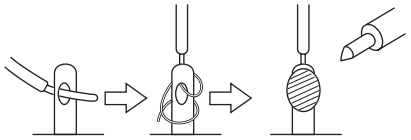


Fig.1-1-1

(7) Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

(8) Check that replaced wires do not contact sharp edged or pointed parts.

(9) When a power cord has been replaced, check that 10-15 kg of force in any direction will not loosen it.

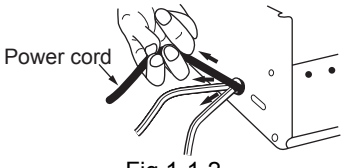


Fig.1-1-2

(10) Also check areas surrounding repaired locations.

(11) Products using cathode ray tubes (CRTs)In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits.Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

(12) Crimp type wire connectorIn such cases as when replacing the power transformer in sets where the connections between the power cord and power trans former primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.

- **Connector part number** :E03830-001
- **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
- **Replacement procedure**

a) Remove the old connector by cutting the wires at a point close to the connector.Important : Do not reuse a connector (discard it).

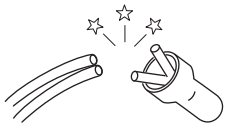


Fig.1-1-3

b) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

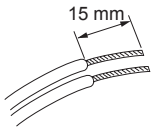


Fig.1-1-4

c) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

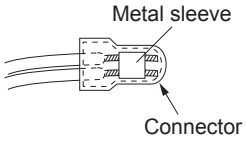


Fig.1-1-5

d) As shown in Fig.1-1-6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

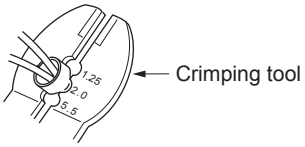


Fig.1-1-6

e) Check the four points noted in Fig.1-1-7.

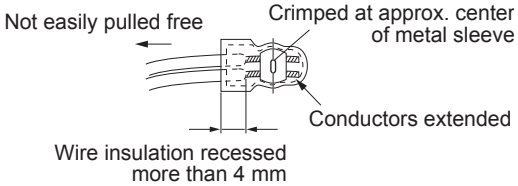

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig.1-1-7

1.1.2 Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

(1) Insulation resistance test
Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).See table 1 below.

(2) Dielectric strength test
Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See Fig.1-1-11 below.

(3) Clearance distance
When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See Fig.1-1-11 below.

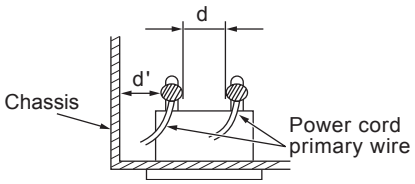


Fig.1-1-8

(4) Leakage current test
Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).
Measuring Method : (Power ON)Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See Fig.1-1-9 and following Fig.1-1-12.

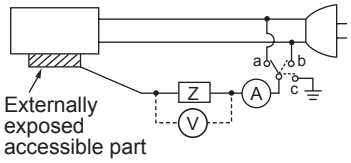
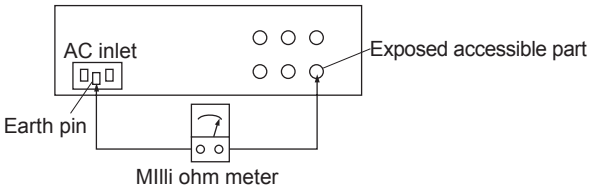


Fig.1-1-9

(5) Grounding (Class 1 model only)
Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).Measuring Method:
Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See Fig.1-1-10 and grounding specifications.



Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

Fig.1-1-10

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R≧ 1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 minute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	1 MΩ ≦R≦ 12 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R≧ 10 MΩ/500 V DC	AC 3 kV 1 minute (Class Ⅱ) AC 1.5 kV 1 minute (Class Ⅰ)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Fig.1-1-11

AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	0.15 μF, 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

Fig.1-1-12

NOTE :
These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

SECTION 2
SPECIFIC SERVICE INSTRUCTIONS

2.1 Different table of features

The following table indicates main different points between models HR-J4020UA, HR-J7020UA, HR-J4020UB and HR-J7020UM.

	HR-J4020UA	HR-J7020UA	HR-J4020UB	HR-J7020UM
POWER PLUG	IRAM	←	BRAZIL PLUG	SASO
HiFi HEAD	NOT USED	USED	NOT USED	USED
SHUTTLE SEARCH (LATCH)-PAL	SP × 7, LP × 7	←	NOT USED	←
VIDEO SYSTEM	PAL-N (SP,LP) / NTSC (SP,EP)	←	PAL-M/NTSC (SP,EP) NTSC→PAL-M PB (SP,EP) PAL→PAL-M PB(SP,LP)	NTSC (SP,EP)
SQPB	NTSC (SP,EP)	←	PAL-M/NTSC (SP,EP)	NTSC (SP,EP)
RECORDING & PLAYBACK SPEED	NTSC:REC:SP/EP, PLAY:SP/LP/EP PAL-N:REC:SP/LP, PLAY:SP/LP	←	REC:SP/EP, PLAY:SP/LP/EP	←
REAR AV INPUT TERMINAL	USED	←	←	NOT USED
STEREO DECODER	NOT USED	MTS	NOT USED	MTS
RF OUT CH/RF OUT SYSTEM [INITIAL]	[3CH],4CH,OFF/[N]	←	[3CH],4CH,OFF/[M]	←
CLOCK / SUMMER TIME ADJ.	24H / USED(MANUAL)	←	←	12H / NOT USED
AUTO SP → EP(LP) TIMER	SP → LP	←	SP → EP	←
DISPLAY TYPE	4-DOT LED	4-DIGIT LED	4-DOT LED	4-DIGIT LED
POWER OFF DIMMER	NOT USED	USED	NOT USED	USED
OSD LANGUAGES	SPANISH, ENGLISH	←	PORTUGUESE	SPANISH, ENGLISH
DISPLAY OFF	NOT USED	USED(with MENU)	NOT USED	USED(with MENU)

NOTE:
Mark ← is same as left.

2.2 Service position

This unit has been designed so that the Mechanism and Main board assemblies can be removed together from the chassis assembly. Before diagnosing or servicing the circuit boards, take out the major parts from the chassis assembly.

2.2.1 How to set the "Service position"

(1) Refer to the disassembly procedure and perform the disassembly of the major parts before removing the Mechanism assembly.
(2) Remove the screws that fix the Mechanism assembly to the Chassis assembly. If any other screws are used to fix the boards, remove them also.
(3) Remove the combined Mechanism and Main board assemblies.
(4) If any other major parts are used, remove them also.
(5) Connect the wires and connectors of the major parts that have been removed in steps (1) to (4). (Refer to Fig. 2-2a.)
(6) Place the combined Mechanism, Main board and other board assemblies upside down.
(7) Insert the power cord plug into the power outlet and then proceed with the diagnostics and servicing of the board assembly.

Note:

- **Before inserting the power cord plug into the power outlet, make sure that none of the electrical parts are able to short-circuit between the workbench and the board assembly.**
- **For the disassembly procedure of the major parts and details of the precautions to be taken, see "3.1 Removing the major parts".**
- **If there are wire connections from the Main board and Mechanism assemblies to the other major parts, be sure to remove them (including wires connected to the major parts) first before performing step (2).**
- **When carrying out diagnosis and repair of the Main board assembly in the "Service position", be sure to ground both the Main board and Mechanism assemblies. If they are improperly grounded, there may be noise on the playback picture or FDP counter display may move even when the mechanism is kept in an inoperative status.**
- **In order to diagnose the playback or recording of the cassette tape, set the Mechanism assembly to the required mode before placing it upside down. If the mechanism mode is changed (including ejection) while it is in an upside down position the tape inside may be damaged.**
- **For some models, the mechanism and board assemblies are attached by connectors only. When carrying out a diagnosis or repair of the boards in the "Service position", make sure that the connectors are not disconnected.**

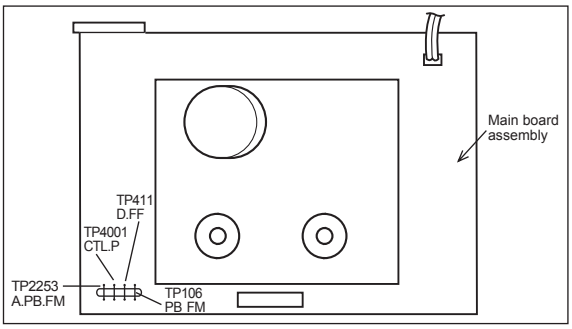


Fig.2-2a

2.3 Jig RCU mode

This unit uses the following two modes for receiving remote control codes.

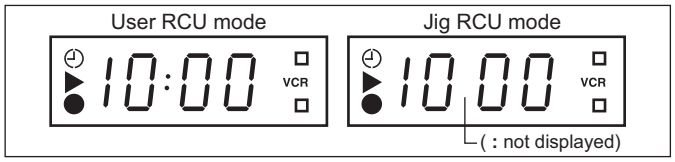
(1) User RCU mode:Ordinary mode for use by the user.

(2) Jig RCU mode: Mode for use in production and servicing.

When using the Jig RCU, it is required to set the VCR to the Jig RCU mode (the mode in which codes from the Jig RCU can be received). As both of the above two modes are stored in the EEPROM, it is required to set the VCR back to the User RCU mode each time that an adjustment is made or to check that the necessary operations have been completed.These modes can be set by the operations described below.

Note:

- **Confirm the RCU mode when exchanged parts.Since some SERVICE PARTS sets the VCR to the jig RCU mode as initial setting.**



2.3.1 Setting the Jig RCU mode

(1) Turn on the power.

(2) Press the follwing remocon keys continuously within 2 seconds “MENU“→“2“→“8“→”OK”.

Note:

- **When the VCR is set to the Jig RCU mode, the symbols (" : ") in the time display of the FDP are turned off. (7 segment LED display model)**
- **When the VCR is set to the jig RCU mode, the "POWER" LED are blinked. (non 7 segment LED display model)**

2.3.2 Setting the User RCU mode

(1) Turn off the power.

(2) Press the "REC" and "PAUSE" buttons of the VCR simultaneously. Alternatively, transmit the code "80" from the Jig RCU.

2.4 Mechanism service mode

This model has a unique function to enter the mechanism into every operation mode without loading of any cassette tape. This function is called the "Mechanism service mode".

2.4.1 How to set the "Mechanism service mode"

(1) Set the VCR to the Jig RCU mode (the mode in which codes from the Jig RCU can be received).

(2) Transmit the code "E5" from the Jig RCU.

(3) Release the lug of the Cassette holder and then slide the Cassette holder toward the direction where the Cassette holder is loaded by manually.

(4) The cassette holder lowers and, when the loading has completed, the mechanism enters the desired mode.

Note:

- **When the VCR is set to the Mechanism service mode, the symbols ("Timer") in the FDP (LED) are blinked. (7 segment LED display model)**
- **When the VCR is set to the Mechanism service mode, the "POWER" and "Timer" LED are blinked. (non 7 segment LED display model))**

2.4.2 How to exit from the "Mechanism service mode"

(1) Unplug the power cord plug from the power outlet.

2.5 Maintenance and inspection

2.5.1 Cleaning

Regular cleaning of the transport system parts is desirable but practically impossible. So make it a rule to carry out cleaning of the tape transport system whenever the machine is serviced.

When the video head, tape guide and/or brush get soiled, the playback picture may appear inferior or at worst disappear, resulting in possible tape damage.

Note:

- **Absolutely avoid sweeping the upper drum vertically as this will cause damage to the video head.**

(1) When cleaning the upper drum (especially the video head), soak a piece of closely woven cloth with alcohol and while holding the cloth onto the upper drum by the fingers, turn the upper drum counterclockwise.

(2) To clean the parts of the tape transport system other than the upper drum, use a piece of closely woven cloth or a cotton swab soaked with alcohol.

(3) After cleaning, make sure that the cleaned parts are completely dry before using the cassette tape.

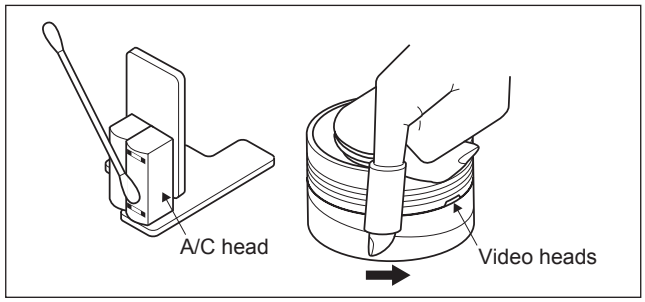


Fig.2-5a

2.5.2 Lubrication

With no need for periodical lubrication, you have only to lubricate new parts after replacement. If any oil or grease on contact parts is soiled, wipe it off and newly lubricate the parts.

Note:

- **See the "mechanism assembly" diagram of the "parts list" for the lubricating or greasing spots, and for the types of oil or grease to be used.**

2.5.3 Suggested servicing schedule for main components

The following table indicates the suggested period for such service measures as cleaning, lubrication and replacement. In practice, the indicated periods will vary widely according to environmental and usage conditions. However, the indicated components should be inspected when a set is brought for service and the maintenance work performed if necessary. Also note that rubber parts may deform in time, even if the set is not used.

System	Parts name	Operation hours	
		1000H	2000H
Tape transport	Drum assembly	C,X	X
	A/C head	C,X	C,X
	Pinch roller arm assembly	C	C
	Full erase head	C	C
	Tension arm assembly	C	C
	Capstan motor (Shaft)	C	C
	Guide arm assembly	C	C
Drive	Capstan motor		X
	Capstan brake assembly		X
	Main brake assembly		X
	Belt (Capstan)	X	X
	Loading motor		X
	Clutch unit		X
	Worm gear		X
	Control plate		X
Other	Rotary encoder		X

C : Cleaning
X : Inspection or Replacement if necessary

SECTION 3
DISASSEMBLY

3.1 Removing the major parts

3.1.1 How to read the procedure table

This table shows the steps for disassembly of the externally furnished parts and board assemblies. Reverse these steps when re-assembling them.

Step/ Loc No.	Part Name	Fig. No.	Point	Note
[1]	Top cover	3-1a	4(S1a),(S1b),3(L1a), 2(SD1a),(P1a),(W1a), CN1(WR1a),	<Note 1a>
	Bracket		2(S1c)	

(1) (2) (3) (4) (5)

(1) Order of steps in Procedure
When reassembling, perform the step(s) in the reverse order.
These numbers are also used as the identification (location) No. of parts Figures.

(2) Part name to be removed or installed.

(3) Fig. No. showing procedure or part location.

(4) Identification of part to be removed, unhooked, unlocked, released, unplugged, unclamped or unsoldered.
P= Spring, W= Washer, S= Screw, L= Locking tab, SD= Solder, CN**(WR**)= Remove the wire (WR**) from the connector (CN**).

Note:
- **The bracketed ( ) WR of the connector symbol are assigned nos. in priority order and do not correspond to those on the spare parts list.**

(5) Adjustment information for installation

3.1.2 Disassembly procedure

Step/ Loc No.	Part Name	Fig. No.	Point	Note
[1]	Top cover	3-1d	5(S1a)	
[2]	Front panel assembly	3-1d 3-1a	4(L2a), 5(L2b)	<Note 2a>
[3]	Mechanism assembly	3-1d	CN2001(WR3a), 3(S3a)	<Note 3a> <Note 3b>
	(Drum assembly)	3-1b 3-1c	CN1(WR3b), (S3c), (S3d), (S3e),	<Note 3c>
[4]	Main board assembly	3-1d	(S4a), (S4b)	

< Note 2a >
- When reattaching the Front panel assembly, make sure that the door opener of the Side frame (R) is lowered in position prior to the reinstallation.
- When reattaching the Front panel assembly, pay careful attention to the switch lever of the Front panel assembly not to make it touch the switch knob of the Main board assembly from the side.
- When reattaching the Front panel assembly, lift the Cassette door slightly.

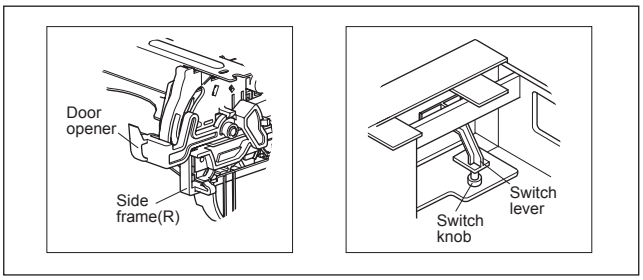


Fig.3-1a

< Note 3a >
- Be careful not to damage the connector and wire etc. during connection and disconnection.
- When connecting the flat wire to the connector, be careful with the flat wire direction.

< Note 3b >
- When reattaching the Mechanism assembly, secure the screws (S3a to S3b) in the order of 1, 2, 3.
- When reattaching the Mechanism assembly, be sure to align the phase of the Rotary encoder on the Main board assembly.
- When reattaching the Mechanism assembly, set the "Mechanism assembling mode". [See "MECHANISM ASSEMBLY SERVICE MANUAL (No. 86700)".]
- When reattaching the Mechanism assembly to the Main board assembly, take care not to damage the sensors and switch on the Main board assembly.

< Note 3c >
- When reattaching the Drum assembly, secure the screws (S3c to S3e) in the order of c, d, e.

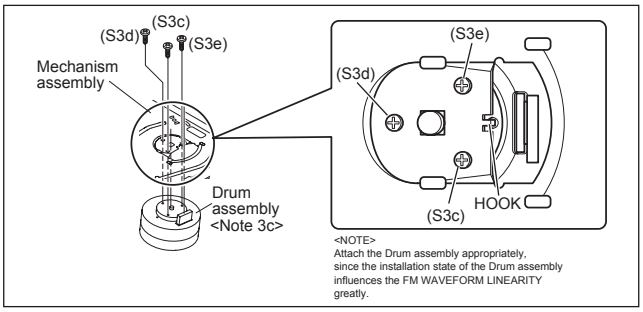


Fig.3-1b

- When handling the drum assembly alone, hold it by the motor or shaft. Be careful not to touch other parts, especially the video heads. Also take care not to damage the connectors.

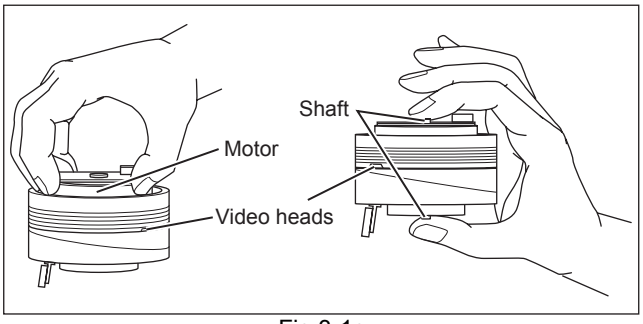


Fig.3-1c

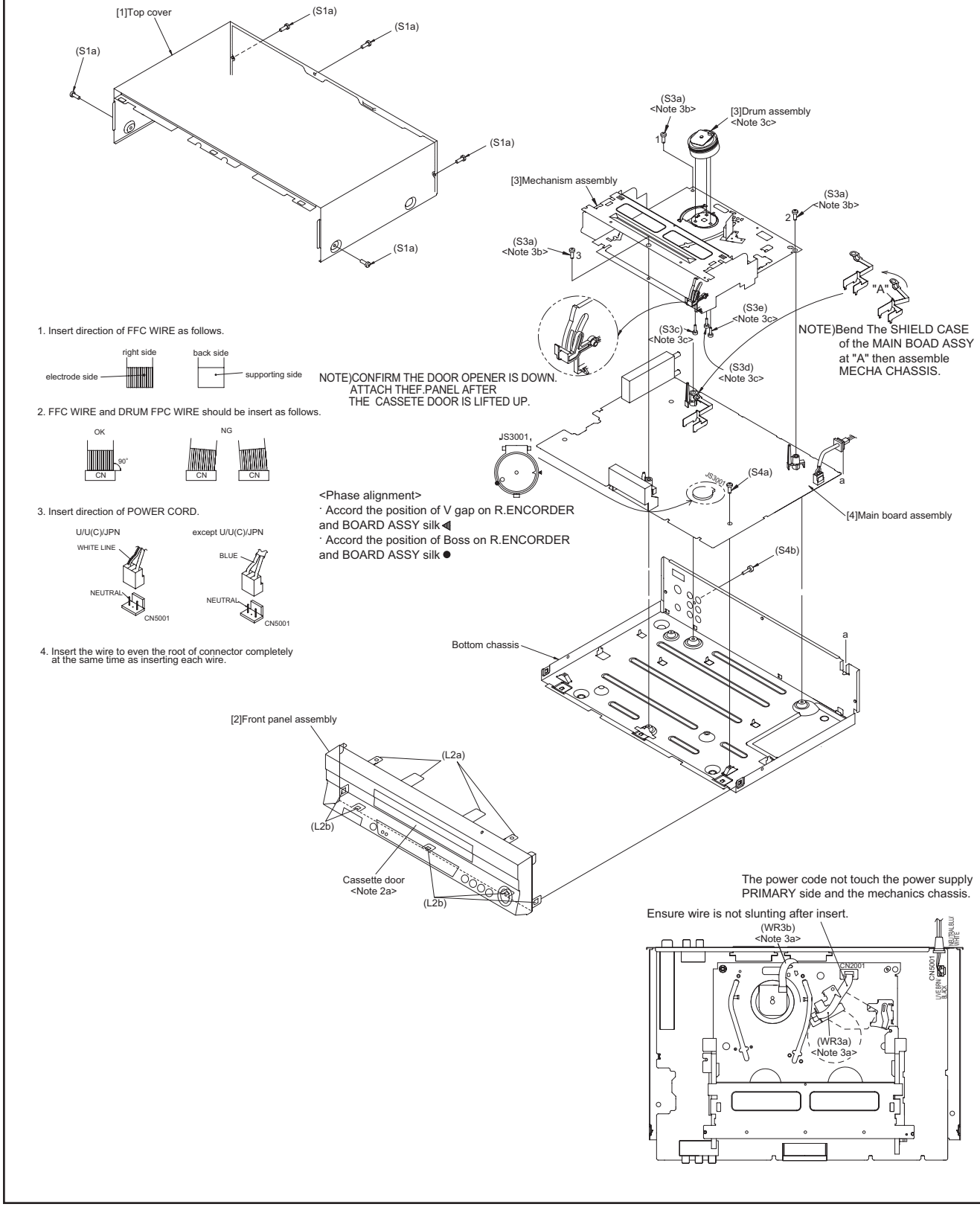

[1]Top cover
(S1a)
(S1a)
(S1a)
(S1a)
(S1a)
(S3a)
<Note 3b>
[3]Drum assembly
<Note 3c>
[3]Mechanism assembly
(S3a)
<Note 3b>
(S3a)
<Note 3b>
(S3e)
<Note 3c>
(S3c)
<Note 3c>
(S3d)
<Note 3c>
"A"
NOTE)Bend The SHIELD CASE
of the MAIN BOAD ASSY
at "A" then assemble
MECHA CHASSIS.
1. Insert direction of FFC WIRE as follows.
right side
back side
electrode side
supporting side
NOTE)CONFIRM THE DOOR OPENER IS DOWN.
ATTACH THEF.PANEL AFTER
THE CASSETE DOOR IS LIFTED UP.
2. FFC WIRE and DRUM FPC WIRE should be insert as follows.
OK
NG
90°
CN
CN
CN
JS3001
JS3001
(S4a)
[4]Main board assembly
<Phase alignment>
· Accord the position of V gap on R.ENCORDER
and BOARD ASSY silk◀
· Accord the position of Boss on R.ENCORDER
and BOARD ASSY silk ●
3. Insert direction of POWER CORD.
U/U(C)/JPN
except U/U(C)/JPN
WHITE LINE
BLUE
NEUTRAL
NEUTRAL
CN5001
CN5001
(S4b)
Bottom chassis
4. Insert the wire to even the root of connector completely
at the same time as inserting each wire.
[2]Front panel assembly
(L2a)
(L2b)
Cassette door
<Note 2a>
(L2b)
The power code not touch the power supply
PRIMARY side and the mechanics chassis.
Ensure wire is not slunting after insert.
(WR3b)
<Note 3a>
CN2001
CN5001
(WR3a)
<Note 3a>

Fig.3-1d

SECTION 4
ADJUSTMENT

4.1 Before adjustment

4.1.1 Precaution

- **The adjustments of this unit include the mechanism compatibility and electrical adjustments. During the performance of this work, be sure to observe the precautions for each type of adjustment.**
- **If there is a reference to a signal input method in the signal column of the adjustment chart, "Ext. S-input" means the Y/C separated video signal and "Ext. input" means the composite video signal input.**
- **Unless otherwise specified, all measuring points and adjustment parts are located on the Main board.**

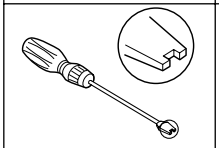
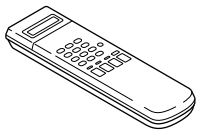
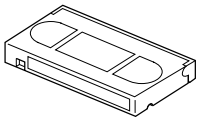
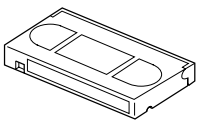
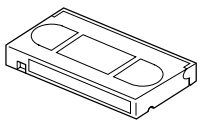
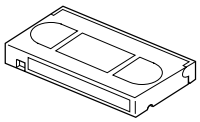
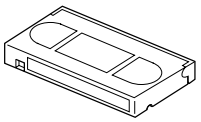
4.1.2 Required test equipments

- Color (colour) television or monitor
- Oscilloscope: wide-band, dual-trace, triggered delayed sweep
- Signal generator: RF / IF sweep / marker
- Signal generator: stairstep, color (colour) bar [PAL]
- Recording tape
- Digit-key remote controller(provided)

4.1.3 Required adjustment tools

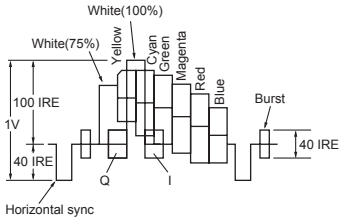
● : Used --- : Not used

	Mechanism compatibility adjustment	Electrical adjustment
Roller driver	●	---
Jig RCU	---	●
Back tension cassette gauge	●	---
Alignment tape (MHP, MHPE)	●	---
Alignment tape (MHP-L,MHPE-L)	●	●

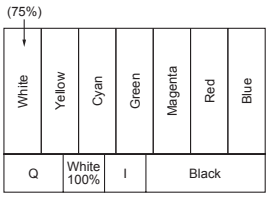
Roller driver PTU94002	Jig RCU PTU94023B	Back tension cassette gauge PUJ48076-2
		
Alignment tape (SP, stairstep, PAL) MHPE	Alignment tape (LP, stairstep, PAL) MHPE-L	
		
Alignment tape (SP, stairstep, NTSC) MHP	Alignment tape (EP, stairstep, NTSC) MHP-L	
		

4.1.4 Color (colour) bar signal,Color (colour) bar pattern

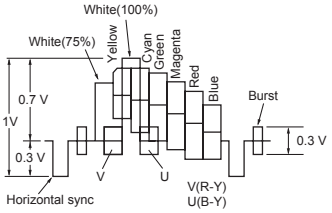
• Color(colour) bar signal [NTSC]



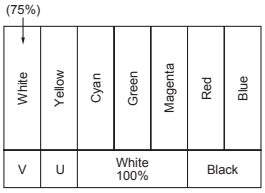
• Color(colour) bar pattern [NTSC]



• Colour bar signal [PAL]



• Colour bar pattern [PAL]



4.1.5 Switch settings

When adjusting this unit, set the VCR mode and switches as described below.

- When using the Jig RCU, it is required to set the VCR to the Jig RCU mode (the mode in which codes from the Jig RCU can be received). (See "section 2 SPECIFIC SERVICE INSTRUCTIONS".)

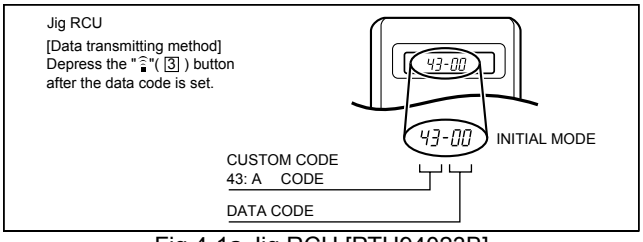


Fig.4-1a Jig RCU [PTU94023B]

- Set the switches as shown below unless otherwise specified on the relevant adjustment chart. The switches that are not listed below can be set as desired.
  If the VCR is not equipped with the functions detailed below, setup is not required.

AUTO PICTURE/VIDEO CALIBRATION/ B.E.S.T./D.S.P.C.	OFF
PICTURE CONTROL/SMART PICTURE	NORMAL/NATURAL
VIDEO STABILIZER	OFF
TBC	ON
Digital 3R	ON
VIDEO NAVIGATION/TAPE MANAGER	OFF
BLUE BACK	OFF

4.1.6 Manual tracking mode (Auto tracking ON/OFF) setting

(1) In order to set to the manual tracking mode during tape playback, press the "SP/EP(LP)"button on the remote control unit.
  - Each press of the button switches the auto tracking ON or OFF.
  - When the manual tracking mode is set, the tracking is placed at the center position.

(2) Press "channel +/-" to adjust the tracking manually.

4.2 Mechanism compatibility adjustment

Note:

- **Although compatibility adjustment is very important, it is not necessary to perform this as part of the normal servicing work. It will be required when you have replaced the A/C head, drum assembly or any part of the tape transport system.**
- **To prevent damaging the alignment tape in the compatibility adjustment, prepare a cassette tape (for self-recording/playback), perform a test on it by transporting it and making sure that the tape is not bent by the tape transport mechanisms such as in the guide rollers.(See Fig.4-2b.)**

4.2.1 Tension pole position

Note:

- **This adjustment must be performed every time the tension band is replaced.**

Signal	(A)	• Back tension cassette gauge [PUJ48076-2]
Mode	(B1) (B2)	• PB • Eject end
Adjustment part	(F)	• Adjust pin [Mechansim assembly]
Specified value	(G)	• 25 - 51 gf·cm (2.45 - 5 x 10^{-3} Nm)

(1) Play back the back tension cassette gauge (A).
(2) Check that the indicated value on the left side gauge is within the specified value (G).
(3) If the indicated value is not within the specified value (G), perform the adjustment in a following procedure.(See Fig.4-2a.)
   a) Remove the top frame, cassette holder and side frames (L/R) all together. (Refer to the SERVICE MANUAL No.86700 [MECHANISM ASSEMBLY].)
   b) Rotate the loading motor gear to move the control plate so that the triangular stamping to the left of the "P"stamping is aligned with the stamping (a) on the main deck. This positioning is mode (B1).
   c) Adjust by turning the adjustment pin so that the tip of the tension arm is aligned with the stamping (b) on the main deck.
   d) Rotate the reel disk (S) by about one turn clockwise and make sure that the round hole of the adjustment pin is located in the "OK" range. If it is outside this range, restart the adjustment from the beginning.

   After completion of the adjustment, rotate the loading gear motor to return it to the mode (B2) position.

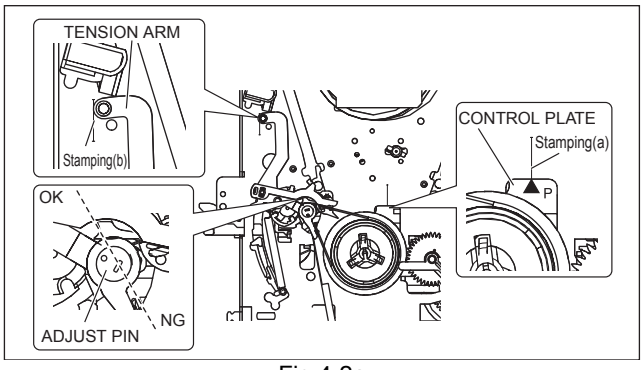


Fig.4-2a

4.2.2 FM waveform linearity

Signal	(A1) (A2)	• Alignment tape(SP, stairstep, PAL) [MHPE] • Alignment tape(LP, stairstep, PAL) [MHPE-L] (UA Model)
	(A1) (A2)	• Alignment tape(SP, stairstep, PAL) [MHP] • Alignment tape(EP, stairstep, PAL) [MHP-L] (UB, UM Model)
Mode	(B)	• PB
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• TP106 (PB. FM)
External trigger	(E)	• TP111 (D. FF)
Adjustment part	(F)	• Guide roller [Mechanism assembly]
Specified value	(G)	• Flat V. PB FM waveform
Adjustment tool	(H)	• Roller driver [PTU94002]

(1) Play back the alignment tape (A1).
(2) Apply the external trigger signal to D.FF (E), to observe the V.PB FM waveform at the measuring point (D).
(3) Set the VCR to the manual tracking mode.
(4) Make sure that there is no significant level drop of the V.PB FM waveform caused by the tracking operation, with its generally parallel and linear variation ensured. Perform the following adjustments when required. (See Fig. 4-2c.)
(5) Reduce the V.PB FM waveform by the tracking operation. If a drop in level is found on the left side, turn the guide roller of the pole base assembly (supply side) with the roller driver to make the V.PB FM waveform linear.
   If a drop in level is on the right side, likewise turn the guide roller of the pole base assembly (take-up side) with the roller driver to make it linear. (See Fig. 4-2c.)
(6) Make sure that the V.PB FM waveform varies in parallel and linearly with the tracking operation again. When required, perform fine-adjustment of the guide roller of the pole base assembly (supply or take-up side).
(7) Unload the cassette tape once, play back the alignment tape (A1) again and confirm the V.PB FM waveform.
(8) After adjustment, confirm that the tape wrinkling does not occur at the roller upper or lower limits. (See Fig. 4-2b.) [Perform adjustment step (9) only for the models equipped with SP mode and EP (or LP) mode.]

   [Perform adjustment step (9) only for the models equipped with SP mode and EP (or LP) mode.]
(9) Repeat steps (1) to (8) by using the alignment tape (A2).

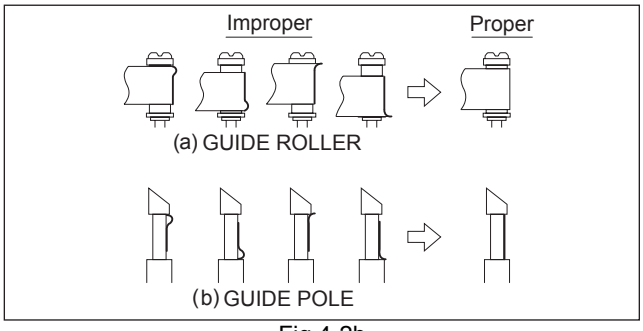


Fig.4-2b

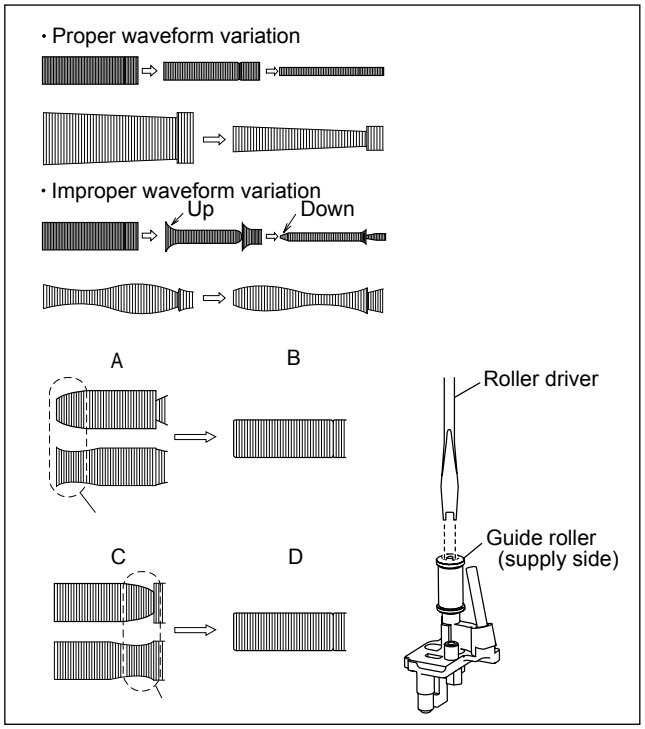


Fig.4-2c

4.2.3 Height and tilt of the A/C head

Note:

- **Set a temporary level of the height of the A/C head in advance to make the adjustment easier after the A/C head has been replaced. (Refer to the SERVICE MANUAL No.86700 [MECHANISM ASSEMBLY].)**

Signal	(A)	• Alignment tape(SP, stairstep, PAL) [MHPE] (UA Model)
	(A)	• Alignment tape(SP, stairstep, PAL) [MHP] (UB, UM Model)
Mode	(B)	• PB
Equipment	(C)	• Oscilloscope
Measuring point	(D1) (D2)	• TP106 (PB. FM) • TP4001 (CTL. P)
External trigger	(E)	• TP111 (D. FF)
Adjustment part	(F)	• A/C head [Mechanism assembly]
Specified value	(G)	• Maximum waveform

(1) Play back the alignment tape (A).
(2) Apply the external trigger signal to D.FF (E), to observe the AUDIO OUT waveform and Control pulse waveform at the measuring points (D1) and (D2) in the ALT mode.
(3) Set the VCR to the manual tracking mode.
(4) Adjust the AUDIO OUT waveform and Control pulse waveform by turning the screws (1), (2) and (3) little by little until both waveforms reach maximum. The screw (1) and (3) are for adjustment of tilt and the screw (2) for azimuth.

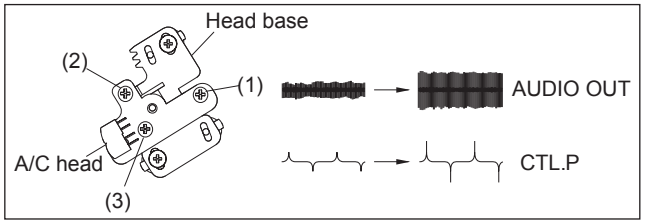


Fig.4-2d

4.2.4 A/C head phase (X-value)

Signal	(A1) (A2)	• Alignment tape(SP, stairstep, PAL) [MHPE] • Alignment tape(LP, stairstep, PAL) [MHPE-L] (UA Model)
	(A1) (A2)	• Alignment tape(SP, stairstep, PAL) [MHP] • Alignment tape(EP, stairstep, PAL) [MHP-L] (UB, UM Model)
Mode	(B)	• PB
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• TP106 (PB. FM)
External trigger	(E)	• TP111 (D. FF)
Adjustment part	(F)	• A/C head base [Mechanism assembly]
Specified value	(G)	• Flat V. PB FM waveform
Adjustment tool	(H)	• Roller driver [PTU94002]

(1) Play back the alignment tape (A1).
(2) Apply the external trigger signal to D.FF (E), to observe the V.PB FM waveform at the measuring point (D).
(3) Set the VCR to the manual tracking mode.
(4) Loosen the screws (4) and (5), then set the Roller driver to the innermost projected part of the A/C head. (See Fig. 4-2e.)
(5) Rotate the roller driver so that the A/C head comes closest to the capstan. From there, move the A/C head back gradually toward the drum until the point where the FM waveform is maximized for the second time, and then tighten the screws (4) and (5) temporarily.
(6) Play an alignment tape (A2) and set to the manual-tracking mode.
(7) Fine-adjust A/C head base position to maximize the FM waveform, and then tighten the screws (4) and (5) firmly.
(8) Play alignment tapes (A1) and (A2) and confirm that the FM waveforms are maximized when the tracking is at the center position.

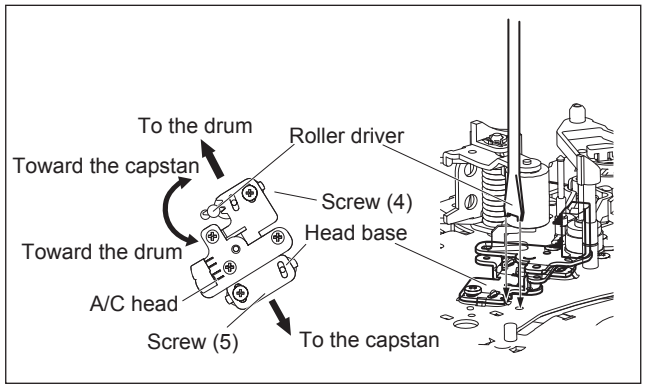


Fig.4-2e

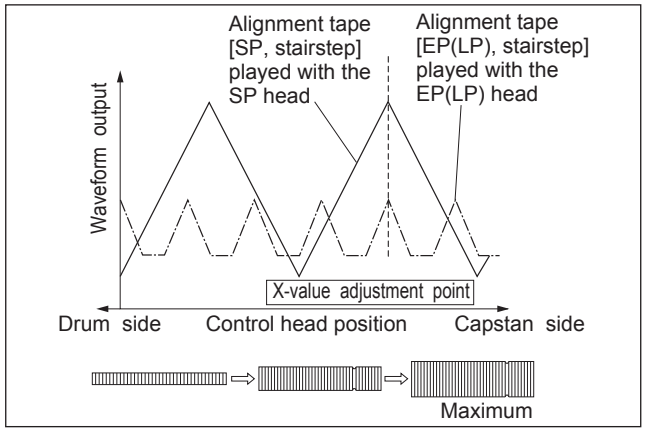


Fig.4-2f

4.3 Electrical adjustment

Note:

The following adjustment procedures are not only necessary after replacement of consumable mechanical parts or board assemblies, but are also provided as references to be referred to when servicing the electrical circuitry.
In case of trouble with the electrical circuitry, always begin a service by identifying the defective points by using the measuring instruments as described in the following electrical adjustment procedures. After this, proceed to the repair, replacement and/or adjustment. If the required measuring instruments are not available in the field, do not change the adjustment parts (variable resistor, etc.) carelessly.

4.3.1 Servo circuit

4.3.1.1 Switching point

Signal	(A1) (A2) (A3)	• Stairstep signal • Alignment tape(EP,stairstep,NTSC) [MHP-L] • Alignment tape(LP,stairstep,PAL) [MHPE-L]
Mode	(B)	• PB
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• VIDEO OUT terminal (75 ohm terminated) • TP106 (PB. FM)
External trigger	(E)	• TP111 (D.FF)
Adjustment part	(F)	• Jig RCU: Code “5A”
Specified value	(G)	• 6.5 ± 0.5H
Adjustment tool	(H)	• Jig RCU [PTU94023B]

<UB,UM Model>

(1) Play back the signal (A1) of the alignment tape (A2).
(2) Apply the external trigger signal to D.FF (E) to observe the VIDEO OUT waveform and V.PB FM waveform at the measuring points (D1) and (D2).
(3) Set the VCR to the manual tracking mode.
(4) Adjust tracking so that the V.PB FM waveform becomes maximum.
(5) Set the VCR to the Auto adjust mode by transmitting the code (F) from the Jig RCU. When the VCR enters the stop mode, the adjustment is completed.
(6) If the VCR enters the eject mode, repeat steps (1) to (5) again.
(7) Play back the alignment tape (A2) again, confirm that the switching point is the specified value (G).

<UA Model>

(1) Play back the signal (A1) of the alignment tape (A3).
(2) Perform the above steps (2) to (6).

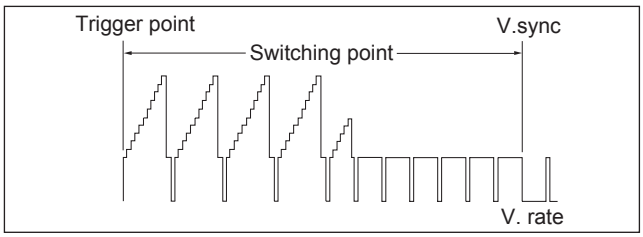


Fig.4-3a Switching point

4.3.1.2 Slow tracking preset

Signal	(A1) (A2) (A3)	• Ext. input • Color (colour) bar signal [NTSC] • Color (colour) bar signal [PAL-N] (UA Model)
Mode (Notes)	(B1)	• SP/EP
	(B2)	UA Model • SP/LP
Measuring point	(D)	• TV-Monitor
Adjustment part	(F)	• Jig RCU: Code “71”or “72”
Specified value	(G)	• Minimum noise
Adjustment tool	(H)	• Jig RCU [PTU94023B]

(1) Record the signal (A2) in the mode (B1), and play back the recorded signal.
(2) Set the VCR to the manual tracking mode.
(3) Set the VCR to the FWD slow (+1/6x) mode.
(4) Transmit the code (F) from the Jig RCU to adjust so that the noise bar becomes the specified value (G) on the TV monitor in the slow mode.
(5) Set the VCR to the Stop mode.
(6) Confirm that the noise bar is (G) on the TV monitor in the slow mode.

<UA Model>

(1) Record the signal (A3) in the mode (B2), and play back the recorded signal.
(2) Repeat steps (2) to (6) .

Note:

- **For FWD slow (+1/6x) playback, transmit the code "08" from the Jig RCU to enter the slow playback mode, and transmit the code “D0” for REV slow (+1/6x) mode.**

SECTION 5
TROUBLESHOOTING

5.1 Manually removing the cassette tape

If you cannot remove the cassette tape which is loaded because of any electrical or mechanical failures, manually remove it by taking the following steps.

(1) Unplug the power cord plug from the power outlet.

(2) Refer to the disassembly procedure of the VCR and perform the disassembly of the major parts before removing the mechanism assembly. (See Fig. 5-1a)

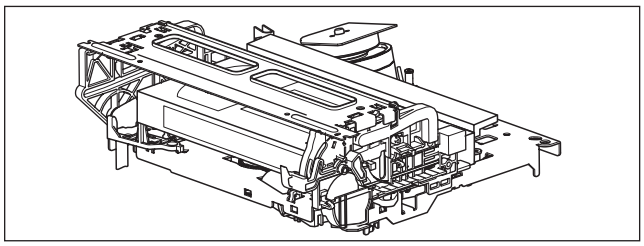


Fig.5-1a

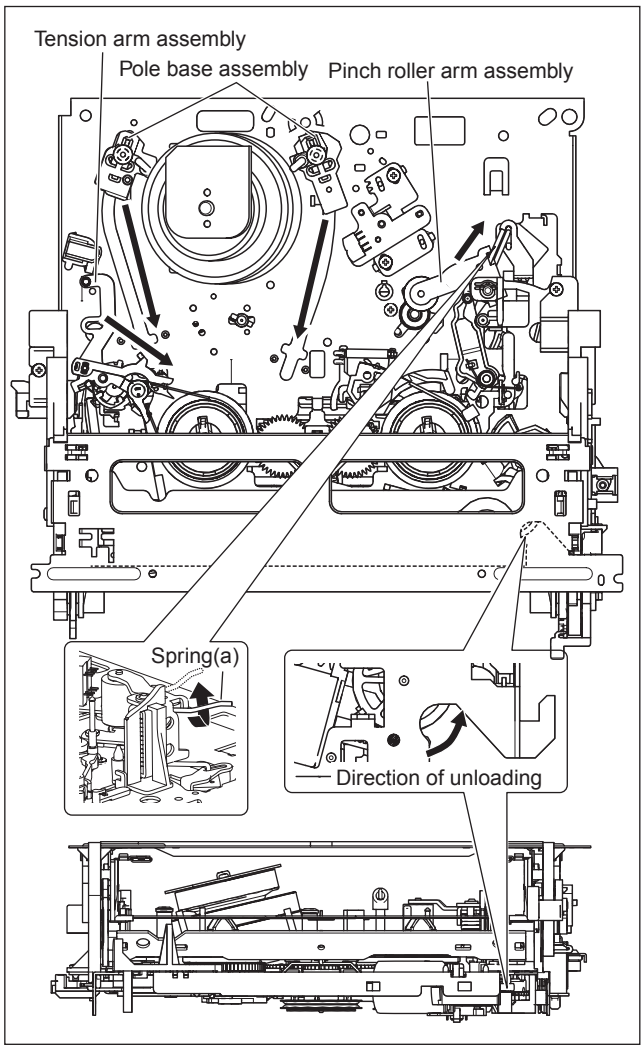


Fig.5-1b

(3) Unload the pole base assembly by manually turning the gear of the loading motor until the pole base assembly is hidden behind the cassette lid. In doing so, hold the tape by the hand to keep the slack away from any grease. (See Fig.5-1b)

In case of mechanical failures, while keeping the tension arm assembly free from tension, pull out the tape on the pole base assembly. Take the spring(a) of the pinch roller arm assembly off the hook, and detach it from the tape.

(4) Remove the screw (a) of the side frame (L/R).

(5) Hold the slack tape and cassette cover together, lift the cassette tape, top frame, cassette holder and side frames (L, R) together from the rear and remove them by dis-engaging the hooks (a) and (b).

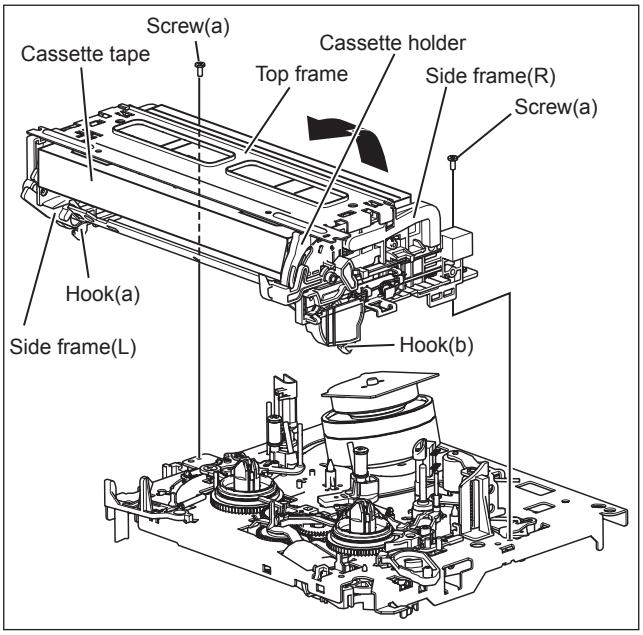


Fig.5-1c

(6) Take up the slack of the tape into the cassette. This completes removal of the cassette tape.

5.2 Emergency display function

This unit saves details of the last two emergencies as the EMG history and allows the status of the VCR and the mechanism of each emergency to be shown both on the display and as OSD information.
When using the emergency function, it is required to set the VCR to the Jig RCU mode (the mode in which codes from the Jig RCU can be received).

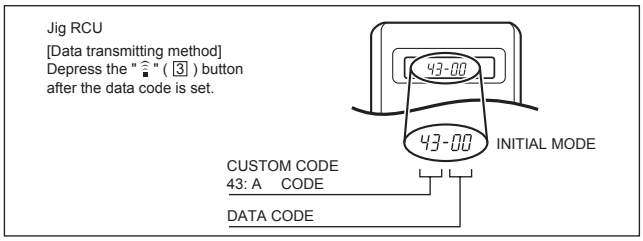


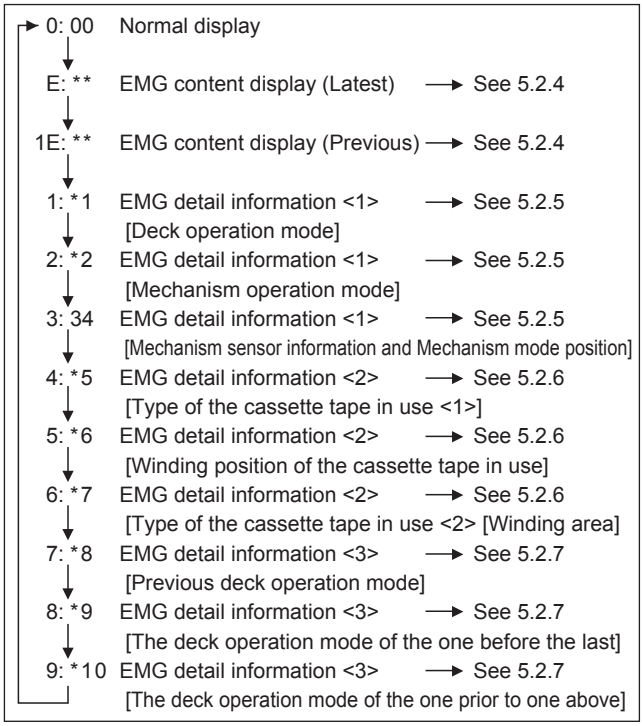
Fig.5-2a Jig RCU [PTU94023B]

5.2.1 Displaying the EMG information

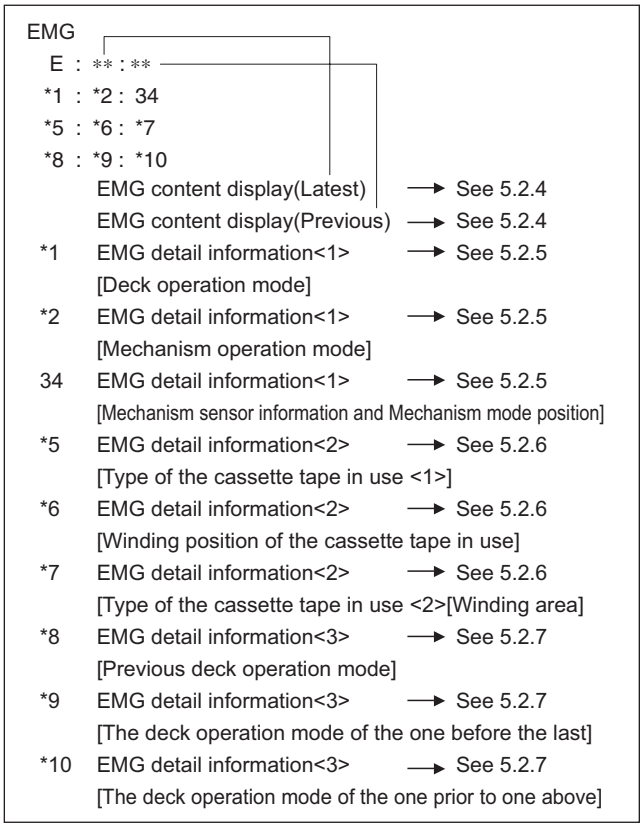
The EMG detail of information can be displayed by transmitting the code "59" from the Jig RCU.

Note:

- **The EMG detail information < 1 >< 2 > show the information on the latest EMG.**
  It becomes " - - : - - : - -" when there is no latest EMG record.


0: 00 Normal display
E: ** EMG content display (Latest) → See 5.2.4
1E: ** EMG content display (Previous) → See 5.2.4
1: *1 EMG detail information <1> → See 5.2.5
[Deck operation mode]
2: *2 EMG detail information <1> → See 5.2.5
[Mechanism operation mode]
3: 34 EMG detail information <1> → See 5.2.5
[Mechanism sensor information and Mechanism mode position]
4: *5 EMG detail information <2> → See 5.2.6
[Type of the cassette tape in use <1>]
5: *6 EMG detail information <2> → See 5.2.6
[Winding position of the cassette tape in use]
6: *7 EMG detail information <2> → See 5.2.6
[Type of the cassette tape in use <2> [Winding area]
7: *8 EMG detail information <3> → See 5.2.7
[Previous deck operation mode]
8: *9 EMG detail information <3> → See 5.2.7
[The deck operation mode of the one before the last]
9: *10 EMG detail information <3> → See 5.2.7
[The deck operation mode of the one prior to one above]

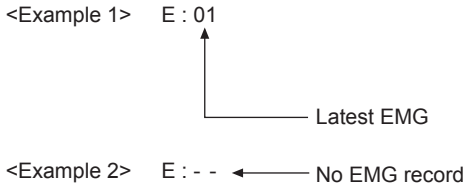
EMG display of 7segment LED display model
Fig.5-2b


EMG
E : ** : **
*1 : *2 : 34
*5 : *6 : *7
*8 : *9 : *10
EMG content display(Latest) → See 5.2.4
EMG content display(Previous) → See 5.2.4
*1 EMG detail information<1> → See 5.2.5
[Deck operation mode]
*2 EMG detail information<1> → See 5.2.5
[Mechanism operation mode]
34 EMG detail information<1> → See 5.2.5
[Mechanism sensor information and Mechanism mode position]
*5 EMG detail information<2> → See 5.2.6
[Type of the cassette tape in use <1>]
*6 EMG detail information<2> → See 5.2.6
[Winding position of the cassette tape in use]
*7 EMG detail information<2> → See 5.2.6
[Type of the cassette tape in use <2>[Winding area]
*8 EMG detail information<3> → See 5.2.7
[Previous deck operation mode]
*9 EMG detail information<3> → See 5.2.7
[The deck operation mode of the one before the last]
*10 EMG detail information<3> → See 5.2.7
[The deck operation mode of the one prior to one above]

EMG display of 4 dot LED model
Fig.5-2c

< Reference > EMG display of FDP display mode

(1) Transmit the code "59" from the Jig RCU.
The FDP shows the EMG content in the form of "E:**:**".



(2) Transmit the code "59" from the Jig RCU again.
The FDP shows the EMG detail information < 1 > in the form of " *1: *2 : 34 ".

*1 : Deck operation mode at the moment of EMG
*2 : Mechanism operation mode at the moment of EMG
3- : Mechanism sensor information at the moment of EMG
-4 : Mechanism mode position at the moment of EMG

(3) Transmit the code "59" from the Jig RCU once again.
The FDP shows the EMG detail information < 2 > in the form of " *5 : *6 : *7 ".

*5 : Type of the cassette tape in use < 1 > .
*6 : Winding position of the cassette tape in use
*7 : Type of the cassette tape in use < 2 > (Winding area)

(4) Transmit the code "59" from the Jig RCU once again.
The FDP shows the EMG detail information < 3 > in the form of "*8 : *9 : *10".

*8 : Previous deck operation mode at the moment of EMG
*9 : The deck operation mode of the one before the last at the moment of EMG
*10: The deck operation mode of the one prior to one above at the moment of EMG

(5) Transmit the code "59" from the Jig RCU once again to reset the display.

5.2.2 Clearing the EMG history

(1) Display the EMG history.
(2) Transmit the code "36" from the Jig RCU.
(3) Reset the EMG display.

5.2.3 Details of the OSD display in the EMG display mode

During the EMG display, the OSD shows the data on the deck mode, etc. The details of the display contents are as follows.

Note:

- **The display is variable depending on the part No. of the System Control microcomputer (IC3001) built into the VCR. In the following, refer to the figure carrying the same two characters as the top two characters of the part number of your IC.**
- **The sensor information in the OSD display contents is partially different from the mechanism sensor information in EMG detail information < 1 >.**

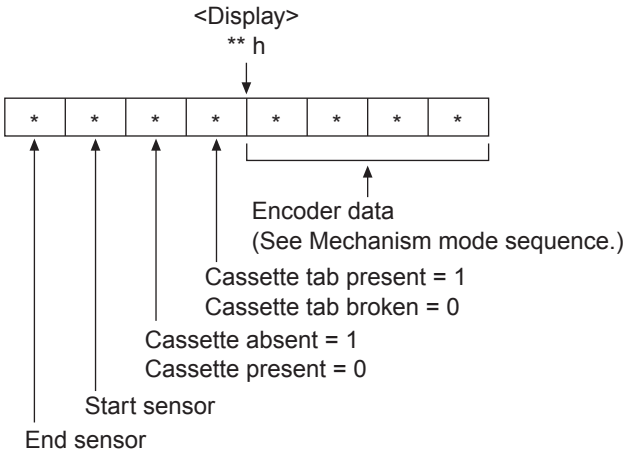
[For MN* only]

AA	BB	CC	DD	EE
FF	GG	HH	I I	J J
KK	L L	MM	NN	OO
PP	QQ	RR	SS	TT
UU	VV	WW	XX	YY

AA : Deck operation mode (See EMG detail information < 1 >.)
BB : Mechanism operation mode (See EMG detail of information < 1 >.)
CC : Mechanism transition flag
DD : Capstan motor control status
EE : Loading motor control status
FF : Sensor information (See sensor information details.)
GG : Capstan motor speed
HH : Key code (JVC code)
I I : Supply reel winding diameter data, higher 8 bits.
JJ : Supply reel winding diameter data, lower 8 bits.
KK : Mechanism sensor information & mechanism mode position(See EMG detail of information < 1 >.)
LL : Tape speed data, higher 8 bits.
MM : Tape speed data, lower 8 bits.
NN : Cassette tape type < 2 >, higher 8 bits. (See EMG detail of information < 2 >.)
OO : Cassette tape type < 2 >, lower 8 bits. (See EMG detail of information < 2 >.)
PP : General data display area

YY : General data display area

***FF:Sensor information details**

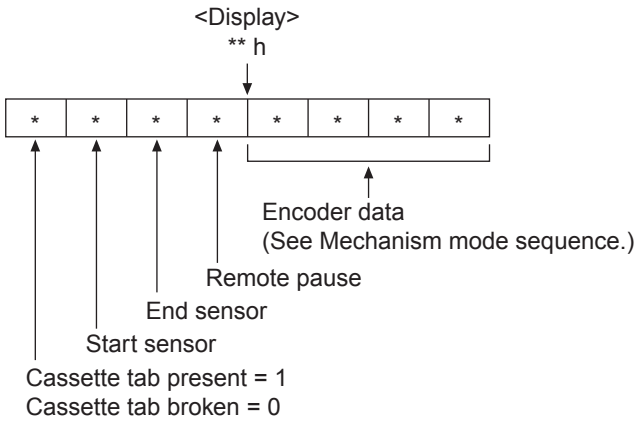


[For *HD only]

AA	BB	CC
DD	EE	FF
GGGG	HHHH	
I I	J J J J	
KKKK	L L L L	MMMM
ROM No.		

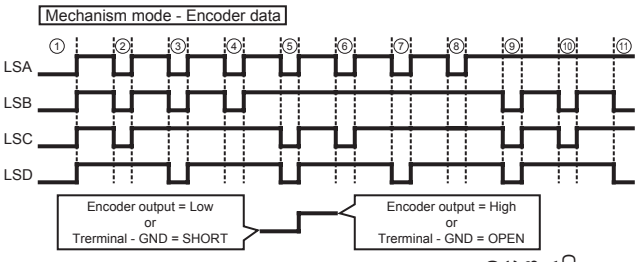
AA : Key code (JVC code)
BB : Deck operation mode(See EMG detail information < 1 >.)
CC : Mechanism operation mode (See EMG detail information < 1 >.)
DD : Sensor information (See sensor information details.)
EE : Capstan motor speed (Search, double speed)
FF : Tracking value
GGGG : Cassette tape type < 2 >, 16 bits. (See EMG detail information < 2 >.)
HHHH : Supply reel winding diameter data
I I : Capstan motor speed (FF/REW, double speed)
JJJJ : Tape speed data, lower 8 bits.
KKKK : General data display area
LLLL : General data display area
MMMM : General data display area

***DD:Sensor information details**

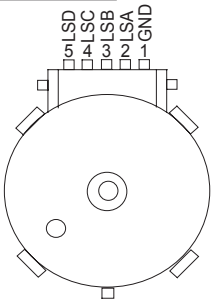


[For both MN*/HD*]

Mechanism mode sequence



No.	Position	Encoder data
①	EJECT	0 h = 0000
②	EJECT1	1 h = 0001
③	EJECT2	2 h = 0010
④	ULSTOP	3 h = 0011
⑤	UPPER	4 h = 0100
⑥	ONSTOP(PLAY)	5 h = 0101
⑦	FWD/SS	6 h = 0110
⑧	REV/SS	7 h = 0111
⑨	OFFSTOP	8 h = 1000
⑩	FFREW-BRAKE	9 h = 1001
⑪	FFREW	A h = 1010
⑫	MIDDLE	F h = 1111



5.2.4 EMG content description

Note:

EMG contents "E08/E09" are for the model with Dynamic Drum (DD).

FDP	CONTENT	CAUSE
E01: Loading EMG	If the mechanism mode does not change to the next mode within 4 seconds after the loading motor starts rotating in the loading direction, while the mechanism is in the after-loading position (with the tape up against the pole base), [E:01] is identified and the power is switched OFF. However, if the tape loading is not completed within 4 seconds after the loading motor starts rotating in the loading direction, the tape is simply unloaded and ejected. No EMG data is recorded in this case.	1. The mechanism is locked in the middle of the mode transition during a tape loading operation. 2. The mechanism overruns during the tape loading operation because the SYSCON cannot recognize the mechanism mode normally. This problem is due to a cause such as a rotary encoder failure. 3. Power is not supplied to the loading MDA. (M12V/Vcc/Vref/ICP are disconnected in the middle.)
E02: Unloading EMG	When the mechanism mode cannot be changed to another mode even when the loading motor has rotated for more than 4 seconds in the unloading direction, [E:02] is identified and the power is turned off.	1. The mechanism is locked in the middle of mode transition. 2. Without an eject signal being sent from the SYSCON, unloading is attempted (i.e. Ejection is attempted while the tape is still inside the mechanism.) because the SYSCON cannot recognize the mechanism mode normally. This is due to a cause such as a rotary encoder failure. (Mechanism position: UPPER) 3. Power is not supplied to the loading MDA. (M12V/Vcc/Vref/ICP are disconnected in the middle.)
E03: Take Up Reel Pulse EMG	When the falling edje of the take-up reel pulse has not been generated for more than 4 seconds in the capstan rotating mode, [E:03] is identified, the pinch rollers are turned off and stopped, and the power is turned off. In this case, however, the mechanism should be in position after tape loading. Note that the reel EMG is not detected during Slow/Frame advance operations.	1. The take-up reel pulse is not generated in the FWD transport modes (PLAY/FWD SEARCH/FF, etc.) because; 1)The idler gear is not meshed with the take-up reel gear because the mechanism malfunctions for some reason. 2)The idler gear is meshed with the take-up reel gear, but incapable of winding due to too large mechanical load (abnormal tension); 3)The reel is rotating normally but an FG pulse is not generated due to the take-up reel sensor failure. 2. The supply reel pulse is not generated in the REV transport modes (REV SEARCH/REW, etc.) because; 1) The idler gear is not meshed with the supply reel gear because the mechanism malfunctions for some reason. 2) The idler gear is meshed with the supply reel gear, but incapable of winding due to too large a mechanical load (abnormal tension); 3) The reel rotates normally but the FG pulse is not generated due to a supply reel sensor failure. 3. Power(SW5V) is not supplied to the reel sensor on the tape winding side.
E04: Drum FG EMG	When the drum FG pulse has not been input for more than 3 seconds in the drum rotating mode, [E:04] is identified, the pinch rollers are turned off and stopped, and the power is turned off.	1. The drum could not start or the drum rotation has stopped due to too large a load on the tape, because; 1) The tape tension is abnormally high; 2) The tape is damaged or a foreign object (grease, etc.) adheres to the tape. 2. The drum FG pulse did not reach the System controller CPU because; 1) The signal circuit is disconnected in the middle; 2) The FG pulse generator (hall device) of the drum is faulty. 3. The drum control voltage (DRUM CTL V) is not supplied to the MDA. 4. Power (M12V) is not supplied to the drum MDA.
E05: Cassette Eject EMG	If the cassette does not reach the eject position within about 0.7 seconds after the cassette housing has started the cassette ejection operation, [E:05] is identified, the drive direction is reversed to load the tape, the mode is switched to STOP mode with the pinch roller OFF, and the power is switched OFF. During the cassette insertion process, the drive direction is reversed and the cassette is ejected if the tape is not up against the pole base within about 3 seconds after the start of the cassette pulling-in operation. If the cassette does not reach the eject position within about 0.7 seconds after the drive mode reversal operation, [E:05] is identified and the power is switched OFF immediately.	1. The cassette cannot be ejected due to a failure in the drive mechanism of the housing. 2. When the housing load increases during ejection, the loading motor is stopped because of lack of headroom in its drive torque. Housing load increasing factors: Temperature environment (low temperature, etc.), mechanism wear or failure. 3. The sensor/switch for detecting the end of ejection are not functioning normally. 4. The loading motor drive voltage is lower than specified or power (M12V) is not supplied to the motor (MDA). 5. When the user attempted to eject a cassette, a foreign object (or perhaps the user's hand) was caught in the opening of the housing.
E06: Capstan FG EMG	When the capstan FG pulse has not been generated for more than 1 second in the capstan rotating mode, [E:06] is identified, the pinch rollers are turned off and stopped, and the power is turned off.However, the capstan EMG is not detected in SLOW/STILL modes. Note that, if the part number of the System Control IC begins with "MN" or "M3", the capstan EMG is not detected even during the FF/REW operation.	1. The capstan could not start or the capstan rotation has stopped due to too large a load on the tape, because; 1) The tape tension is abnormally high (mechanical lock); 2) The tape is damaged or a foreign object (grease, etc.) is adhered to the tape (occurrence of tape entangling, etc.). 2. The capstan FG pulse did not reach the System controller CPU because; 1) The signal circuit is disconnected in the middle; 2) The FG pulse generator (MR device) of the capstans is faulty. 3. The capstan control voltage (CAPSTAN CTL V) is not supplied to the MDA. 4. Power (M12V, SW5V) are not supplied to the capstan MDA.
E07: SW Power Short-Circuit EMG	When short-circuiting of the SW power supply with GND has lasted for 0.5 second or more, [E:07] is identified, all the motors are stopped and the power is turned off.	1. The SW 5 V power supply circuit is shorted with GND. 2. The SW 12 V power supply circuit is shorted with GND.
E08: DD Initialized (Absolute Position Sensor) EMG	When DD tilting does not complete in 4 seconds, [E:08] is identified, the tilt motor is stopped and the power is turned off.	1. The absolute value sensor is defective. (The soldered parts have separated.) 2. The pull-up resistor at the absolute sensor output is defective. (The soldered parts have separated.) 3. Contact failure or soldering failure of the pins of the connector (board-to-board) to the absolute value sensor. 4. The absolute value sensor data is not sent to the System Controller CPU.
E09: DD FG EMG	When the DD FG pulse is not generated within 2.5 seconds, [E:09] is identified, the tilt motor is stopped and the power is turned off.	1. The FG sensor is defective. (The soldered parts have separated.) 2. The pull-up resistor at the FG sensor output is defective. (The soldered parts have separated.) 3. Contact failure or soldering failure of the pins of the connector (board-to-board) to the FG sensor. 4. The power (5V) to the sensor is not supplied. (Connection failure/soldering failure) 5. The FG pulse is not sent to the System Controller CPU. 6. The tilt motor is defective. (The soldered parts have separated.) 7. The drive power to the tilt motor is not supplied. (Connection failure/soldering failure) 8. The tilt motor drive MDA - IC is defective. 9. Auto-recovery of the DD tilting cannot take place due to overrun.
E0A: Supply Reel Pulse EMG	When the falling edge of the supply reel pulse has not been generated for more than 10 seconds in the capstan rotating mode, [E:0A] is identified and the cassette is ejected (but the power is not turned off). In this case, however, the mechanism should be in the position after tape loading (with the tape up against the pole base). Also note that the reel EMG is not detected during Slow/Frame advance operations.	1. The supply reel pulse is not generated in the FWD transport mode (PLAY/FWD SEARCH/FF, etc.) because; 1) PLAY/FWD or SEARCH/FF is started while the tape in the inserted cassette is cut in the middle; 2) A mechanical factor caused tape slack inside and outside the supply reel side of the cassette shell. In this case, the supply reel will not rotate until the tape slack is removed by the FWD transport, so the pulse is not generated until then; 3) The reel is rotating normally but the FG pulse is not generated due to a supply reel sensor failure. 2. The take-up reel pulse is not generated in the REV transport mode (REV SEARCH/REW, etc.). 1) REV SEARCH/REW is started when the tape in the inserted cassette has been cut in the middle; 2) A mechanical factor caused tape slack inside and outside the take-up reel side of the cassette shell. In this case, the take up will not rotate until the tape slack is removed by the REV transport, so the pulse will not be generated until that time; 3) The reel is rotating normally but the FG pulse is not generated due to a take-up reel sensor failure. 3. The power (SW 5V) to a reel sensor is not supplied.
EU1: Head clog warning history	Presupposing the presence of the control pulse output in the PLAY mode, when the value obtained by mixing the two V.FM output channels (without regard to the A.FM output) has remained below a certain threshold level for more than 10 seconds, [E:U1] is identified and recorded in the emergency history. During the period in which the head clog is detected, the FDP shows "U:01" and the OSD repeats the "3 seconds of warning display" and the "7 seconds of noise picture display" alternately. EMG code : "E:C1" or "E:U1" / FDP : "U:01" / OSD : "Try cleaning tape." or "Use cleaning cassette." The head clog warning is reset when the above-mentioned threshold has been exceeded for more than 2 seconds or the mode is changed to another mode than PLAY.	

5.2.5 EMG detail information < 1 >

The status (electrical operation mode) of the VCR and the status (mechanism operation mode/sensor information) of the mechanism in the latest EMG can be confirmed based on the figure in EMG detail information < 1 > .

[FDP/OSD display] *1 : *2 : 34

*1 : Deck operation mode at the moment of EMG
*2 : Mechanism operation mode at the moment of EMG
3- : Mechanism sensor information at the moment of EMG
-4 : Mechanism mode position at the moment of EMG

Note:

- **For EMG detailed information < 1 >, the content of the code that is shown on the display (or OSD) differs depending on the parts number of the system control microprocessor (IC3001) of the VCR. The system control microprocessor parts number starts with two letters, refer these to the corresponding table.**

***1 : Deck operation mode**

[Common table of MN* and HD]

Display		Deck operation mode
MN*	HD*	
00	-	Mechanism being initialized
01	00	STOP with pinch roller pressure off (or tape present with P.OFF)
02	01	STOP with pinch roller pressure on
03	-	POWER OFF as a result of EMG
04	04	PLAY (Normal playback)
0C	0E	REC
10	11	Cassette ejected
20	22	FF
21	-	Tape fully loaded, START sensor ON, short FF
22	-	Cassette identification FWD SEARCH before transition to FF (SPx7-speed)
24	26	FWD SEARCH (variable speed) including x2-speed
2C	2E	INSERT REC
40	43	REW
42	-	Cassette identification REV SEARCH before transition to REW (SPx7-speed)
44	47	REV SEARCH (variable speed)
4C	4C	AUDIO DUB
6C	6E	INSERT REC (VIDEO + AUDIO)
84	84	FWD STILL / SLOW
85	85	REV STILL / SLOW
8C	8F	REC PAUSE
8D	-	Back spacing
8E	-	Forward spacing (FWD transport mode with BEST function)
AC	AF	INSERT REC PAUSE
AD	-	INSERT REC back spacing
CC	CD	AUDIO DUB PAUSE
CD	-	AUDIO DUB back spacing
EC	EF	INSERT REC (VIDEO + AUDIO) PAUSE
ED	-	INSERT REC (VIDEO + AUDIO) back spacing

***2 : Mechanism operation mode**

[Table of MN*]

Display	Mechanism operation mode
00	Command standby (No command to be executed)
01	Immediate Power OFF after EMG occurrence
02	Loading from an intermediate position during mechanism initialization
03	Unloading due to EMG occurrence during mechanism initialization
04	Ejecting cassette (ULSTOP to EJECT)
05	Inserting cassette (EJECT to ULSTOP)
06	Loading tape (ULSTOP to PLAY)
07	Unloading tape (PLAY to ULSTOP)
08	Transition from pinch roller ON to STOP
09	Transition from pinch roller OFF to STOP (PLAY to OFFSTOP)
0A	Transition from pinch roller OFF to STOP at power OFF
0B	Transition from pinch roller ON to STOP at power ON
0C	Transition to PLAY
0D	Transition to Search FF
0E	Transition to REC
0F	Transition to FWD STILL/SLOW
10	Transition to REV STILL/SLOW
11	Transition to Search REV
12	Transition from FF/REW to STOP
13	Transition to FF
14	Transition to REW
15	Tape end detection processing during loading
16	Short FWD/REV at tape sensor ON during unloading
17	Transition to FF/REW brake mode

[Table of HD*]

Display	Mechanism operation mode
00	STOP with pinch roller pressure off
01	STOP with pinch roller pressure on
02	U/L STOP (or tape being loaded)
04	PLAY (Normal playback)
05	PLAY (x1-speed playback using JOG)
0E	REC
11	Cassette ejected
22	FF
26	FWD SEARCH (variable speed) including x2-speed
2E	INSERT REC
43	REW
47	REV SEARCH
4C	AUDIO DUB
6E	INSERT REC (VIDEO + AUDIO)
84	FWD STILL/SLOW
85	REV STILL/SLOW
8F	REC PAUSE
AF	INSERT REC PAUSE
C7	REV SEARCH (x1-speed reverse playback using JOG)
CD	AUDIO DUB PAUSE
EF	INSERT REC (VIDEO + AUDIO) PAUSE
F0	Mechanism being initialized
F1	POWER OFF as a result of EMG
F2	Cassette being inserted
F3	Cassette being ejected
F4	Transition from STOP with pinch roller pressure on to STOP with pinch roller pressure off
F5	Transition from STOP with pinch roller pressure on to PLAY
F6	Transition from STOP with pinch roller pressure on to REC
F7	Cassette type detection SEARCH before FF/REW is being executed
F8	Tape being unloaded
F9	Transition from STOP with pinch roller pressure off to STOP with pinch roller pressure on
FA	Transition from STOP with pinch roller pressure off to FF/REW
FB	Transition from STOP with pinch roller pressure off to REC.P (T.REC,etc.)
FC	Transition from STOP with pinch roller pressure off to cassette type detection SEARCH
FD	Short REV being executed after END sensor on during unloading
FE	Tension loosening being executed after tape loading (STOP with pinch roller pressure on)
FF	Tape being unloaded

3- : Mechanism sensor information

[Common table of MN* and HD*]

Display	Mechanism sensor information			
	REC safety SW	Start sensor	End sensor	Mechansim position sensor
0-	Tab broken	ON	ON	ON
1-	Tab broken	ON	ON	OFF
2-	Tab broken	ON	OFF	ON
3-	Tab broken	ON	OFF	OFF
4-	Tab present	OFF	ON	ON
5-	Tab present	OFF	ON	OFF
6-	Tab present	OFF	OFF	ON
7-	Tab present	OFF	OFF	OFF
8-	Tab broken	ON	ON	ON
9-	Tab broken	ON	ON	OFF
A-	Tab broken	ON	OFF	ON
B-	Tab broken	ON	OFF	OFF
C-	Tab present	OFF	ON	ON
D-	Tab present	OFF	ON	OFF
E-	Tab present	OFF	OFF	ON
F-	Tab present	OFF	OFF	OFF
	Tab broken = 0 Tab present = 1	Sensor ON = 0 sensor OFF = 1	Sensor ON = 0 Sensor OFF = 1	

-4 : Mechanism mode position

[Common table of MN* and HD*]

Mechanism sensor information	Display	Deck operation mode	
Even number (0, 2, 4, 6, 8, A, C, E)	-0	Not established	
	-1	EJECT	EJECT position
	-2	EJECT-EJECT1	Intermodal position
	-3	EJECT1	EJECT1 position
	-4	EJECT1-EJECT2	Intermodal position
	-5	EJECT2	EJECT2 position
	-6	EJECT2-ULSTOP	Intermodal position
	-7	ULSTOP	ULSTOP position
	-8	ULSTOP-UPPER	Intermodal position
	-9	UPPER	Loading (unloading) tape
	-A	UPPER-ONSTOP	Intermodal position
	-B	ONSTOP	PLAY position
	-C	PLAY-FWD/SS	Intermodal position
	-D	FWD/SS	FWD (FWD Still/Slow) position
	-E	FWD/SS-REV	Intermodal position
	-F	REV	REV (REV Still/Slow) position
Odd number (1, 3, 5, 7, 9, B, D, F)	-0	REV-OFFSTOP	Intermodal position
	-1	OFFSTOP	Pinch roller OFF position
	-2	OFFSTOP-FFREWB	Intermodal position
	-3	FFREWB	FF/REW Brake position
	-4	FFREWB-FFREW	Intermodal position
	-5	FFREW	FF/REW position

5.2.6 EMG detail information < 2 >

The type of the cassette tape and the cassette tape winding position can be confirmed based on the figure in EMG detail information < 2 > .

Note:

- **EMG detail information < 2 > is the reference information stored using the remaining tape detection function of the cassette tape. As a result, it may not identify cassette correctly when a special cassette tape is used or when the tape has variable thickness.**

***5 : Cassette tape type < 1 >**

Display	Cassette tape type <1>
00	Cassette type not identified
16	Large reel/small reel (T-0 to T-15/T-130 to T-210) not classified
82	Small reel, thick tape (T-120) identified/thin tape (T-140) identified
84	Large reel (T-0 to T-60) identified
92	Small reel, thick tape (T-130) identified/thin tape (T-160 to T-210) identified
93	Small reel, thick tape/C cassette (T-0 to T-100/C cassette) not classified
C3	Small reel, thick tape/C cassette (T-0 to T-100/C cassette) being classified
D3	Small reel, thick tape/C cassette (T-0 to T-100/C cassette) being classified
E1	C cassette, thick tape (TC-10 to TC-20) identified
E2	Small reel, thick tape (T-0 to T-100) identified
E9	C cassette, thin tape (TC-30 to TC-40) identified
F1	C cassette, thick tape/thin tape (TC-10 to TC-40) not classified

Note:

- **Cassette tape type < 1 > is identified a few times during mode transition and the identification count is variable depending on the cassette tape type. If an EMG occurs in the middle of identification, the cassette tape type may not be able to be identified.**
- **If other value than those listed in the above table is displayed, the cassette tape type is not identified.**

***6 : Cassette tape winding position**

The cassette tape winding position at the moment of EMG is displayed by dividing the entire tape (from the beginning to the end) in 21 sections using a hex number from "00" to "14".

0 : End of winding
14 : Beginning of winding
FF : Tape position not identified

***7 : Cassette tape type < 2 > (Winding area)**

Display	Cassette tape type <2>		(Reference) Word data (Beginning) (End)
00	Cassette type not identified		
04 - 08	C cassette, thick tape	TC-10	(0497 - 0506) (0732 - 0858)
05 - 06	Small reel, thick tape	T-20	(05A9 - 0661)
05 - 0C	C cassette, thick tape	TC-20P	(0599 - 05FF) (0AA1 - 0C07)
06 - 0C	C cassette, thin tape	TC-40	(0623 - 063D) (0C41 - 0CC3)
06 - 0C	C cassette, thin tape	TC-30	(0611 - 0638) (0C0C - 0CB2)
07 - 08	Small reel, thick tape	T-40	(07CC - 08E5)
09 - 0B	Small reel, thick tape	T-60	(09FD - 0B78)
0C - 0D	Small reel, thick tape	T-80(DF-160)	(0C20 - 0DFC)
0D - 0F	Small reel, thick tape	T-90(DF-180)	(0D31 - 0F3E)
0E - 10	Small reel, thick tape	T-100	(0E43 - 107F)
10 - 12	Small reel, thin tape	T-140	(10E1 - 120C)
10 - 13	Small reel, thick tape	T-120(DF-240)	(1073 - 1313)
11 - 14	Small reel, thick tape	T-130	(1185 - 1429)
12 - 14	Small reel, thin tape	T-160	(12D3 - 141F)
13 - 14	Small reel, thin tape	T-210(DF-420)	(1373 - 14C3)
13 - 14	Small reel, thin tape	T-180(DF-360)	(1357 - 14C0)
13 - 14	Small reel, thin tape	T-168	(1395 - 14EE)
13 - 14	Small reel, thick tape	DF-300	(13A8 - 14CE)
15 - 16	Large reel	T-20	(1536 - 1618)
16 - 17	Large reel	T-30	(1647 - 175A)
17 - 18	Large reel	T-40	(1759 - 189C)
19 - 1B	Large reel	T-60	(1989 - 1B2F)

Note:

- **The values of cassette tape type < 2 > in the above table are typical values with representative cassette tapes.**

5.2.7 EMG detail information < 3 >

Three deck operation modes preceding the deck operation mode in which the EMG occurs may be confirmed based on the figures in the EMG information detail < 3 >. For the contents of the displayed information, see the table "Deck operation mode" in section "5.2.5 EMG detail information < 1 >".

JVC
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(No.YD007)

Printed in Japan
WPC

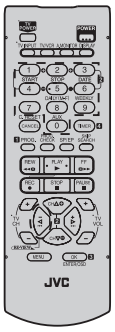
JVC

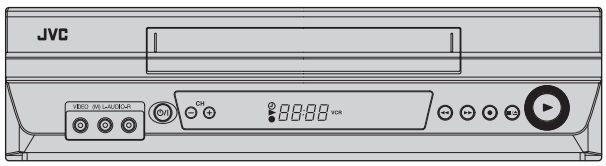
SCHEMATIC DIAGRAMS

VIDEO CASSETTE RECORDER

HR-J4020UA, HR-J4020UB, HR-J7020UA, HR-J7020UM

CD-ROM No.SML200407





HR-J4020UA, HR-J4020UB,
HR-J7020UA, HR-J7020UM [V17C1, V17D0]

VHS N-PAL NTSC (UA model)

VHS (UB, UM model)

SQPB NTSC (UA model)

SQPB (UB, UM model)

Hi-Fi (HR-J7020UA, HR-J7020UM)

For disassembling and assembling of MECHANISM ASSEMBLY, refer to the SERVICE MANUAL No.86700(MECHANISM ASSEMBLY).

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No.YD007SCH
2004/7

CHARTS AND DIAGRAMS

NOTES OF SCHEMATIC DIAGRAM

Safety precautions
The Components indentified by the symbol ⚠ are critical for safety. For continued safety, replace safety critical components only with manufacturer's recommended parts.

1. Units of components on the schematic diagram

Unless otherwise specified.

1) All resistance values are in ohm. 1/6 W, 1/8 W (refer to parts list).
   Chip resistors are 1/16 W.
   K: KΩ(1000Ω), M: MΩ (1000KΩ)
2) All capacitance values are in µF, (P: PF).
3) All inductance values are in µH, (m: mH).
4) All diodes are 1SS133, MA165 or 1N4148M (refer to parts list).

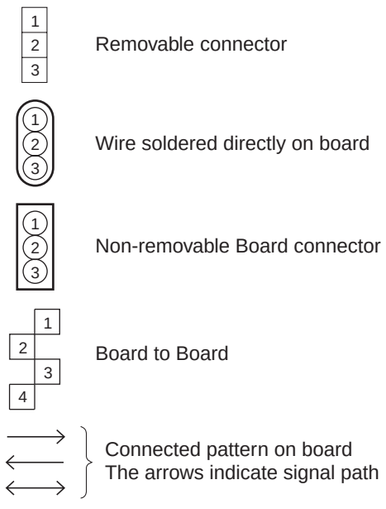
Note: The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.

2. Indications of control voltage

AUX : Active at high.

$\overline{\text{AUX}}$ or AUX(L) : Active at low.

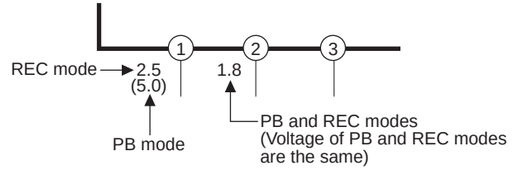
3. Interpreting Connector indications



Note: For the destination of each signal and further line connections that are cut off from the diagram, refer to "BOARD INTERCONNECTIONS"

4. Voltage measurement

1) Regulator (DC/DC CONV) circuits
   REC : Colour bar signal.
   PB : Alignment tape (Colour bar).
   — : Unmeasurable or unnecessary to measure.
2) Indication on schematic diagram
   Voltage indications for REC and PB mode on the schematic diagram are as shown below.



Note: If the voltages are not indicated on the schematic diagram, refer to the voltage charts.

5. Signal path Symbols

The arrows indicate the signal path as follows.

NOTE : The arrow is DVC unique object.

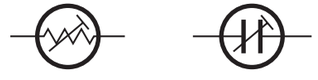
- Playback signal path
- Playback and recording signal path (including E-E signal path)
- Capstan servo path
- Drum servo path

(Example)

- R-Y — Playback R-Y signal path
- Y — Recording Y signal path

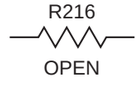
6. Indication of the parts for adjustments

The parts for the adjustments are surrounded with the circle as shown below.



7. Indication of the parts not mounted on the circuit board

"OPEN" is indicated by the parts not mounted on the circuit board.



CIRCUIT BOARD NOTES

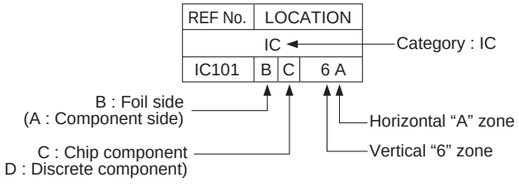
1. Foil and Component sides

1) Foil side (B side) :
   Parts on the foil side seen from foil face (pattern face) are indicated.
2) Component side (A side) :
   Parts on the component side seen from component face (parts face) indicated.

rts location are indicated by guide scale on the circuit board.

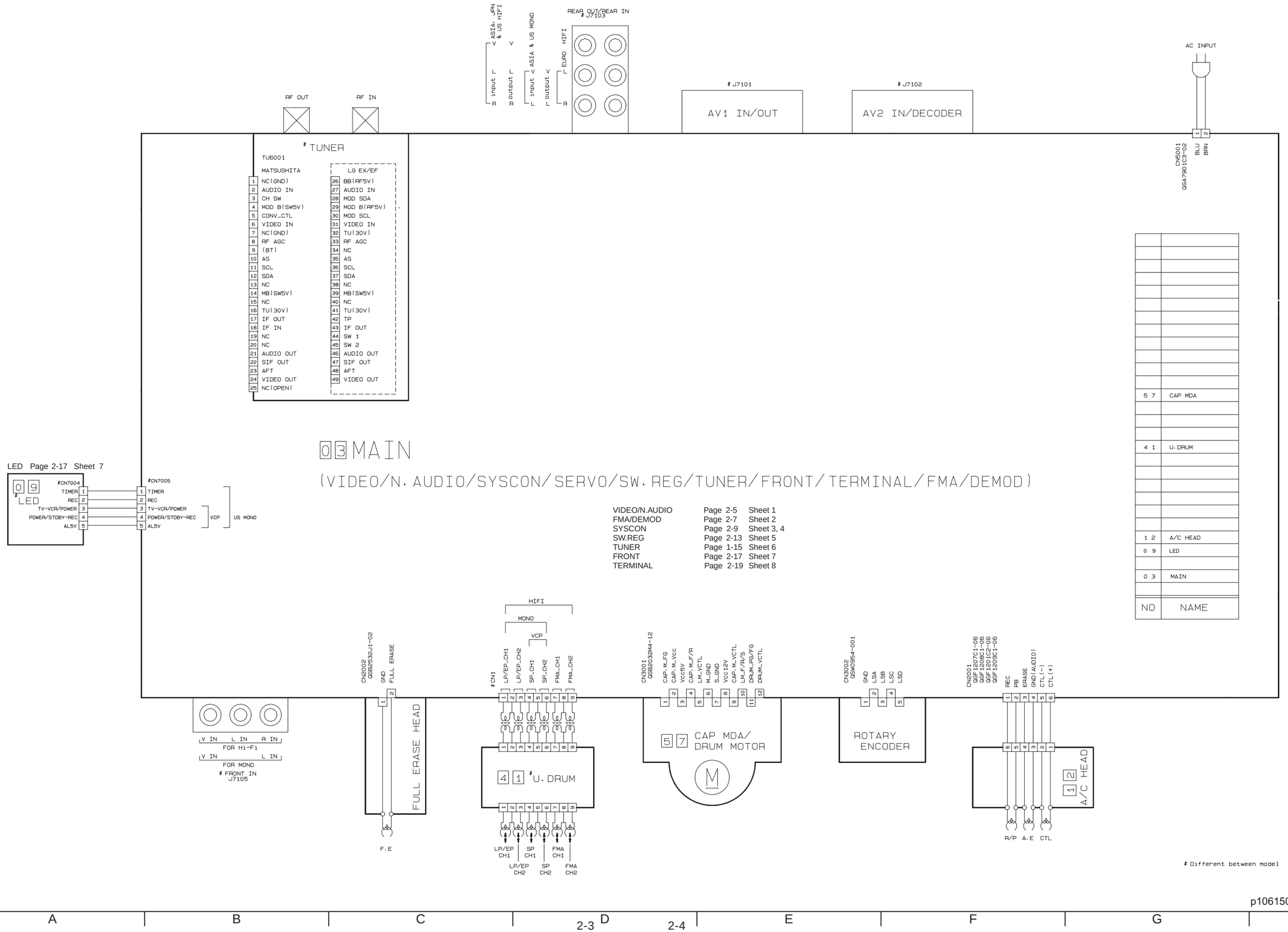
2. Parts location guides

Parts location are indicated by guide scale on the circuit board.

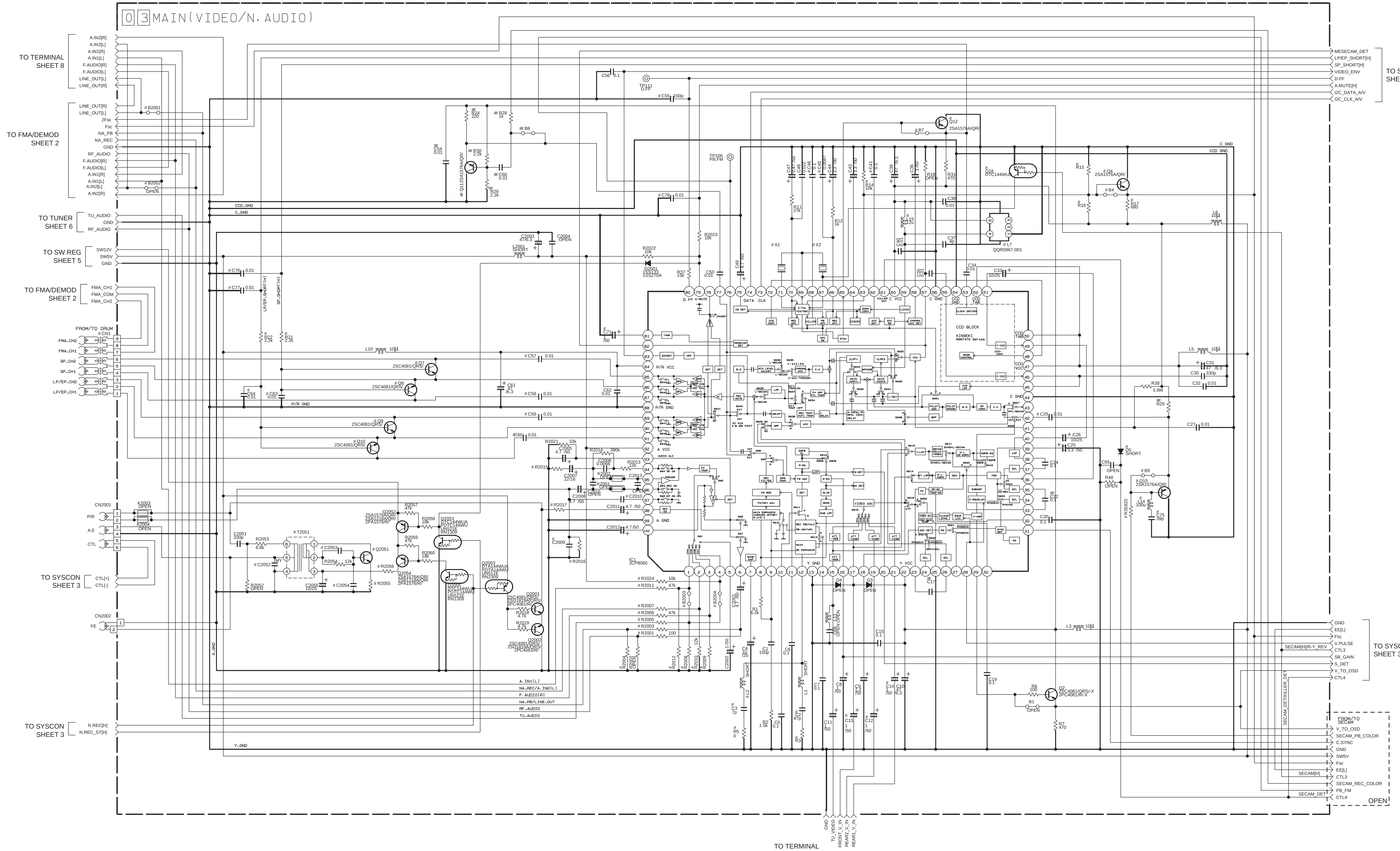


Note: For general information in service manual, please refer to the Service Manual of GENERAL INFORMATION Edition 4 No. 82054D (January 1994).

■ BOARD INTERCONNECTIONS



■ MAIN(VIDEO/N.AUDIO) SCHEMATIC DIAGRAM



VIDEO

#DIFFERENCE TABLE 1

		IC1	X1	B4	B7	Q4	Q12	Q18	R3	R14	R15, R16, R17	R28	R31	C2	C41	C45	C46	C55	B8, B9, R5, R35, C3, C29, C75, L2, L14	D5
NTSC		NVA	×	○	○	×	×	×	8.2k	×	×	×	×	33p	0.1	0.0047	0.033	×	×	×
PAL-M		LSA	QAX0809	×	○	○	×	○	8.2k	×	○	×	×	33p	0.1	0.068	0.01	×	×	○
PAL-N	HIFI	LSA	QAX0808	×	○	○	×	×	8.2k	×	○	×	×	47p	0.22	0.033	0.033	×	×	×
	MONO	LSA	QAX0808	×	○	○	×	×	8.2k	×	○	×	×	47p	0.22	0.033	0.01	×	×	×
PAL/ARC		MSA	QAX0740/796	○	×	×	○	×	4.7k	○	×	×	○	47p	0.1	0.0047	0.01	○	×	×
with SECAM		MSA	QAX0740/796	○	×	×	○	×	8.2k	○	×	○	○	33p	0.1	0.0047	0.01	○	○	○

#DIFFERENCE TABLE 2

INPUT	C12	C13	C14
FRONT	×	○	×
REAR1	×	×	○
FRONT/REAR1	×	○	○
REAR2	○	×	×
FRONT/REAR1/REAR2	○	○	○

#DIFFERENCE TABLE 3

3.58NTSC	X2
YES	○
NO	×

#DIFFERENCE TABLE 4

MESECAM	C71
YES	○
NO	×

#DIFFERENCE TABLE 5

CE	L7	L15
YES	○	×
NO	×	○

#DIFFERENCE TABLE 6

HEAD TYPE		Q7, Q8	Q9, Q10	R21	R22	C57, C58	C59, C60	C63, C64	C76, C77	CN1
4 HEAD HIFI	NTSC/PAL-M	×	×	×	×	0.1	0.1	×	×	9 PIN (1-9)
	PAL/PAL-N	○	○	○	○	0.01	0.01	○	○	9 PIN (1-9)
4 HEAD MONO	NTSC/PAL-M	×	×	×	×	0.1	0.1	×	×	6 PIN (1-6)
	PAL/PAL-N	×	×	×	×	0.1	0.1	×	×	6 PIN (1-6)
2 HEAD		×	×	×	×	0.1	0.1	×	×	6 PIN (1-6)

#DIFFERENCE TABLE 7

AUDIO			FRONT IN		REAR IN		NA REC		LINE OUT	NA PB/LINE OUT		RF AUDIO	TU AUDIO				REAR2 IN	HIFI/MONO
			R2006	R2009	R2011	R2012	R2007	R2010	B2001	R2003	R2004	R2001	B2003	B2004	R2005	R2008	B2002	R2024
HIFI	EURO		×	×	×	×	18k	12k	×	100	×	×	○	×	15k	10k	×	○
	ARC/KOREA		×	×	×	×	18k	12k	×	100	×	×	×	×	×	×	×	○
	UM/UA/UB		×	×	×	×	12k	12k	×	100	×	×	×	×	×	×	×	○
	JAPAN		×	×	×	×	12k	12k	×	0Ω	×	×	×	×	×	×	×	○
MONO	PAL	WITH REAR IN	×	×	47k	5.6k	×	×	○	680	2.7k	100	×	○	15k	10k	×	×
		FRONT & REAR	47k	5.6k	47k	5.6k	×	×	○	680	2.7k	100	×	○	15k	10k	×	×
	VCP	WITH REAR IN	×	×	47k	5.6k	×	×	○	680	2.7k	100	×	×	×	×	×	×
	UA/UB	FRONT & REAR	47k	6.8k	47k	6.8k	×	×	○	680	2.7k	100	×	○	33k	47k	×	×

#DIFFERENCE TABLE 9

	PB EQ		REC EQ		PB GAIN
	R2016	C2009	R2017	C2010	R2015
PAL/MULTI	39k	0.0012	18k	0.0015	300
UM/UA/UB/JAPAN	33k	0.0015	22k	0.001	330

#DIFERENCE TABLE 8

	T2051	C2052	C2053	C2054	R2055	R2056	Q2051
PAL	QQR0002-001 QQR1309-001	0.082	0.0047	0.022	3.3Ω	82Ω	2SC4081/QRS/ 2SD1819A/QRS/ 2PC4081/R/
UM/UA/UB	QQR0002-001 QQR1309-001	0.082	0.0047	0.022	3.3Ω	82Ω	2SC4081/QRS/ 2SD1819A/QRS/ 2PC4081/R/
JAPAN	QQR1197-001 QQR1279-001	0.047	0.0033	0.0068	4.7Ω	56Ω	2SD1820A/RS/ 2SC4097/QR/

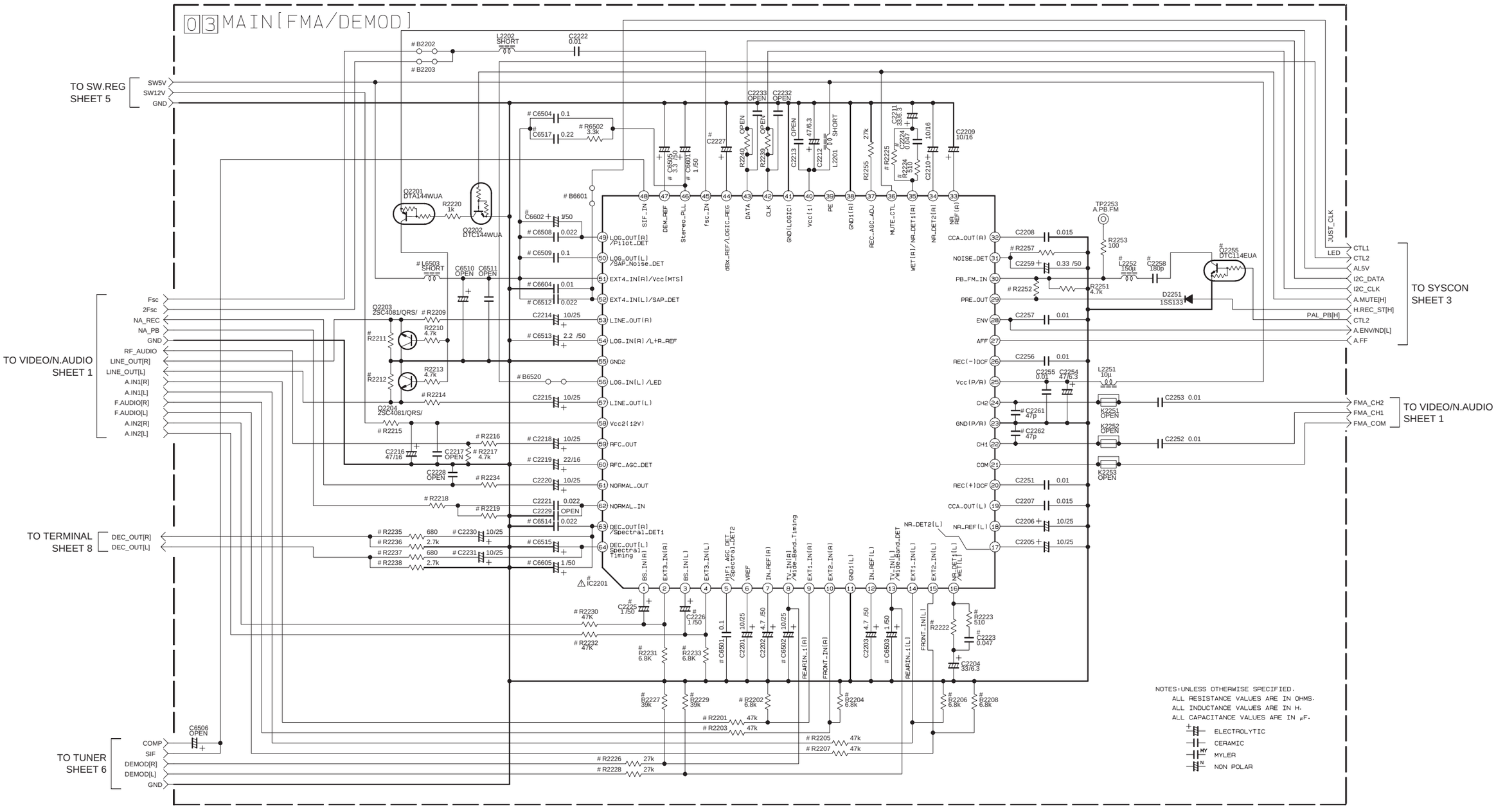
NOTES: UNLESS OTHERWISE SPECIFIED.
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDUCTANCE VALUES ARE IN H.
ALL CAPACITANCE VALUES ARE IN μF.

ELECTROLYTIC
CERAMIC
MYLER
NON POLAR

p10617001a_rev1

SHEET 1

■ MAIN(FMA/DEMOD) SCHEMATIC DIAGRAM [HiFi MODEL ONLY]



#DIFFERENCE TABLE 1

INPUT	FRONT INPUT	REAR INPUT 1	REAR INPUT 2
	R2203 R2204 R2207 R2208	R2201 R2202 R2205 R2206	R2230 R2231 R2232 R2233
YES	○	○	○
NO	×	×	×

#DIFFERENCE TABLE 2

RF OUT		R2216	R2217 C2218 C2219
YES	UM/UA/UB	1k	○
	OTHERS	1.2k	○
NO		×	×

#DIFFERENCE TABLE 3

CH+	C2225 C2226 C2230 C2231 R2235-R2238
YES	○
NO	×

#DIFFERENCE TABLE 4

SECAM/MESECAM	Q2255 L2252 C2258
EU/EK/ARC	○
OTHERS	×

#DIFFERENCE TABLE 5

FMA INTERFERENCE C/M	C2261 C2262
UA/UB	○
OTHERS	×

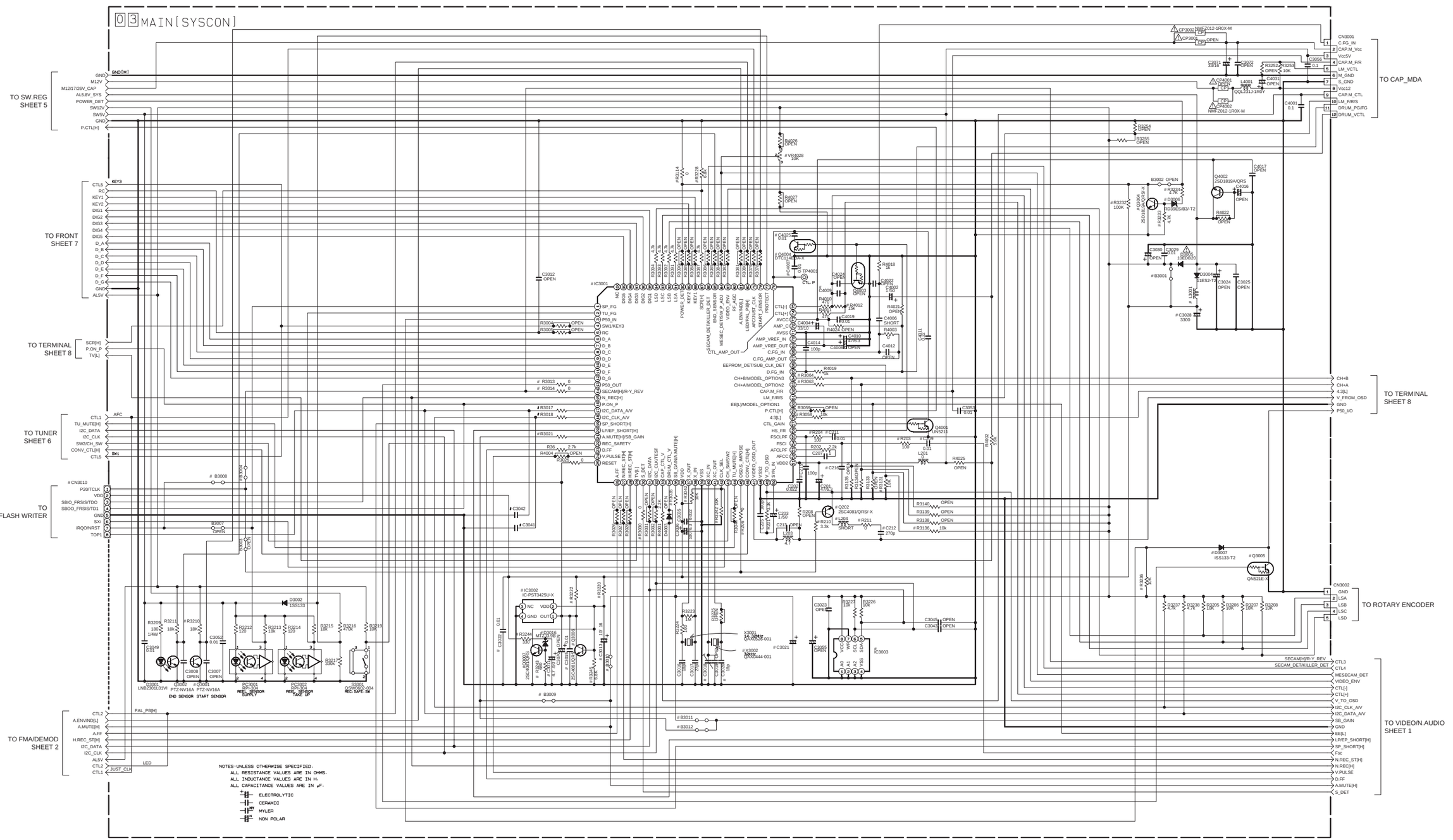
#DIFFERENCE TABLE 6

	DEMOD							NOISE REDUCTION		fsc	2fsc	NA_PB		NA_REC	LINE_OUT		PBFM_IN	NOISE_DET	Vcc2(12V)
	IC2201	C6501 C6505 L6503 B6520	R6502 C6517 C6502-C6504 C6508 C6509 C6512-C6514	B6601 C6601 C6602 C6604 C6605	C6515	C2227	R2226-R2229	R2223 R2224 C2223 C2224	R2222 R2225	B2202	B2203	R2218	R2219	R2234	R2209 R2214	R2211 R2212	R2252	R2257	R2215
EUROPE/ASIA	AN3651FBP	×	×	×	OPEN	10/25	○	○	4.7k	×	○	3.3k	1.2k	100	680	2.7k	220	OPEN	180
UM/UA/UB	AN3663FBP	○	○	×	3.3/50	4.7/50	×	×	0Ω	○	×	3.9k	1k	0Ω	100	3.3k	3.3k	680k	220
JAPAN	AN3672NFBP	○	×	○	1/50	10/25	×	×	0Ω	○	×	3.9k	1k	0Ω	100	3.3k	3.3k	680k	220

p20415001a_rev0

SHEET 2

■ MAIN(SYSCON) SCHEMATIC DIAGRAM



p10616001a_rev1

SHEET 3

2-9 2-10

#DIFFERENCE TABLE 1

		HR-V510EX	HR-V515EF	HR-V210EX	HR-V210AG HR-V211AS HR-V210AA HR-V215ER HR-V216ER	HR-V217AG	HR-V410AG HR-V411AS HR-V415ER	HR-P110AG HR-P111AG HR-P211ER	HR-J7020UM	HR-J7020UA	HR-J4020UA	HR-J4020UB	HR-A20K
SYSCON IC	IC3001	A	B	A	C	C	C	C	D	D	D	D	E
EEPROM	IC3003	8K	16K	8K	4K	4K	4K	4K	4K	4K	4K	4K	8K
START SENSOR	Q3001 R3210	○	○	○	○	○	○	○	×	×	×	×	×
SECAM	R3014	×	○	×	×	○	×	×	×	×	×	×	×
SECAM/MESECAM SUPERIMPOSE	R206 R211 L204 C212 Q202 R210	○	○	○	○	○	○	○	×	×	×	×	×
OSD	R203 C209 R204 C211	○	○	○	○	○	○	○	×	○	○	○	×
	C216 C215	○	○	○	○	○	○	○	SHORT	○	○	○	SHORT
WIDE SCREEN	R3058	○	○	○	×	×	×	×	×	×	×	×	×
P50	Q3007 Q3005 R3013 R3236	○	○	○	×	×	×	×	×	×	×	×	×
DECODER	R3064 R3228 R3063	×	○	×	×	×	×	×	×	×	×	×	×
SGPB	R3030	○	○	×	×	×	○	×	○	○	○	○	○
BACK-UP	Q3004 C3028	○	○	○	○	○	○	×	×	×	×	×	○
	B3001 C3029	×	×	×	×	×	×	○	○	○	○	○	×
RESET CIRCUIT	Q3006 Q3007 D3016	×	×	×	×	×	×	○	○	○	○	○	×
	C3011 R3243-R3245	×	×	×	×	×	×	○	○	○	○	○	×
	R3220	6.8K	6.8K	6.8K	6.8K	6.8K	6.8K	5.6K	5.6K	5.6K	5.6K	5.6K	6.8K
	R3222	4.7K	4.7K	4.7K	4.7K	4.7K	4.7K	470	470	470	470	470	4.7K
RESET IC	IC3002 C3013	○	○	○	○	○	○	×	×	×	×	×	○
	C3015 C3022	○	○	○	○	○	○	×	×	×	×	×	○
POWER DETECT	D3006 Q3004	○	○	○	○	○	○	×	×	×	×	×	○
	R3232-R3234	○	○	○	○	○	○	×	×	×	×	×	○
	R3114	×	×	×	×	×	×	○	○	○	○	○	×
SUB CLOCK	X3002 C3020	○	○	○	○	○	○	×	×	×	×	×	○
	C3019	×	×	×	×	×	×	×	×	×	×	×	○
	C3018	○	○	○	○	○	○	×	×	×	×	×	×
CLK SELECT	R3042	×	○	×	×	×	×	×	×	×	×	×	×
	R3242	○	×	○	○	○	○	○	○	○	○	○	○
EEPROM-LESS MODEL	VR4020	×	×	×	×	×	×	×	×	×	×	×	×
FF/REW SPEED	Q4004 C4025	○	○	○	○	○	○	○	×	×	×	×	×
	C4007	×	×	×	×	×	×	×	○	○	○	○	○
	C4009	150p	150p	150p	150p	150p	150p	150p	0.001u	0.001u	0.001u	0.001u	0.001u
MODEL OPTION GND	R3135	×	×	×	×	×	×	×	×	×	×	×	×
	R3134	×	×	×	×	×	×	×	×	×	×	×	×
	R3133	×	×	×	×	×	×	×	×	×	×	×	×
MODEL OPTION AL5V	R3140	×	×	×	×	×	×	×	×	×	×	×	×
	R3139	×	×	×	×	×	×	×	×	×	×	×	×
	R3138	×	×	×	×	×	×	×	×	×	×	×	×
EEPROM MODEL / SUB CLOCK DETECT	R3131	×	×	×	×	×	×	○	×	×	×	×	×
	R3136	×	×	×	○	○	○	×	×	×	×	×	×
SB GAIN AND A.MUTE SWAP	B3010 B3012	×	○	×	×	×	×	×	×	×	×	×	×
	B3009 B3011	○	×	○	○	○	○	○	○	○	○	○	○
	R3021	0	1K	0	0	0	0	0	0	0	0	0	0
	R3035	4.7K	0	4.7K	4.7K	4.7K	4.7K	4.7K	4.7K	4.7K	4.7K	4.7K	4.7K
	C3021	100/15V	OPEN	100/15V	100/15V	100/15V	100/15V	100/15V	100/15V	100/15V	100/15V	100/15V	100/15V
SHORT TEST COUNTER MEASURE	L3001	10u	10u	10u	10u	10u	10u	10u	SHORT	SHORT	SHORT	SHORT	10u
LINE NOISE C/H	R3017 R3018	0	0	0	0	0	0	0	0	0	0	0	1K
	C3041 C3042	×	×	×	×	×	×	×	×	×	×	×	100p

#DIFFERENCE TABLE 2

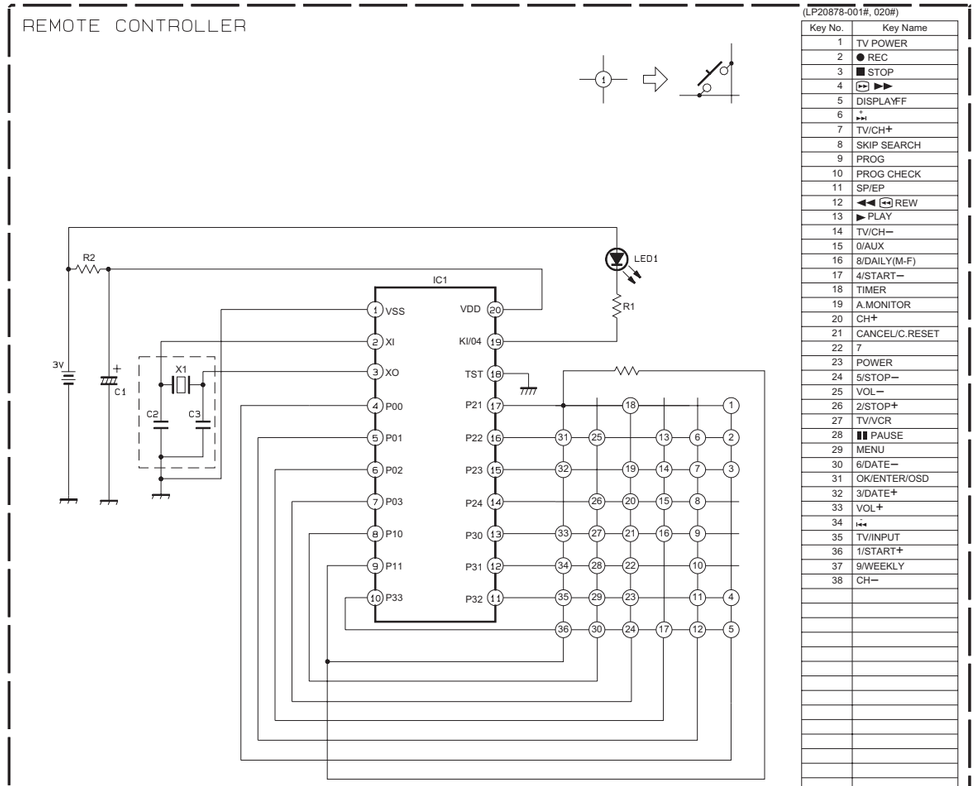
IC3001	A	• MN101D10GJB • MN101DF10GAFJB
	B	• MN101D06HNE • MN101DF06KAFNE
	C	• MN101D10GJE • MN101DF10GAFJE
	D	• MN101D10GJD • MN101DF10GAFJD
	E	• MN101D10FJF • MN101DF10GAFJF

#DIFFERENCE TABLE 3

FLASH WRITER
B3004, B3008-CN3010, R3014

■ REMOTE CONTROLLER SCHEMATIC DIAGRAM

NOTES:
1. All parts shown in this schematic are critical for safety.
2. This schematic is only for reference.
   Avoid replacing individual parts.
   Replace the entire unit only.

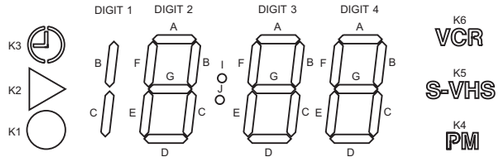


(LP20878-001#, 020#)

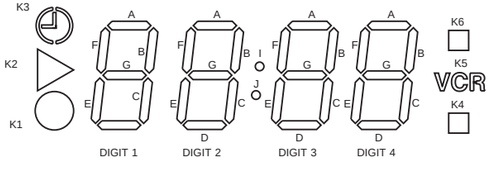
Key No.	Key Name
1	TV POWER
2	● REC
3	■ STOP
4	◄◄ ►►
5	DISPLAY/F
6	▸/II
7	TV/CH+
8	SKIP SEARCH
9	PROG
10	PROG CHECK
11	SP/EP
12	◄◄ REW
13	► PLAY
14	TV/CH−
15	0/AUX
16	8/DAILY(M-F)
17	4/START−
18	TIMER
19	A.MONITOR
20	CH+
21	CANCEL/C.RESET
22	7
23	POWER
24	5/STOP−
25	VOL−
26	2/STOP+
27	TV/VCR
28	▮▮ PAUSE
29	MENU
30	6/DATE−
31	OK/ENTER/OSD
32	3/DATE+
33	VOL+
34	I◄◄
35	TV/INPUT
36	1/START+
37	9/WEEKLY
38	CH−

■ FDP GRID ASSIGNMENT AND ANODE CONNECTION

GRID ASSIGNMENT(HR-J7020UM)



GRID ASSIGNMENT(HR-J7020UA)



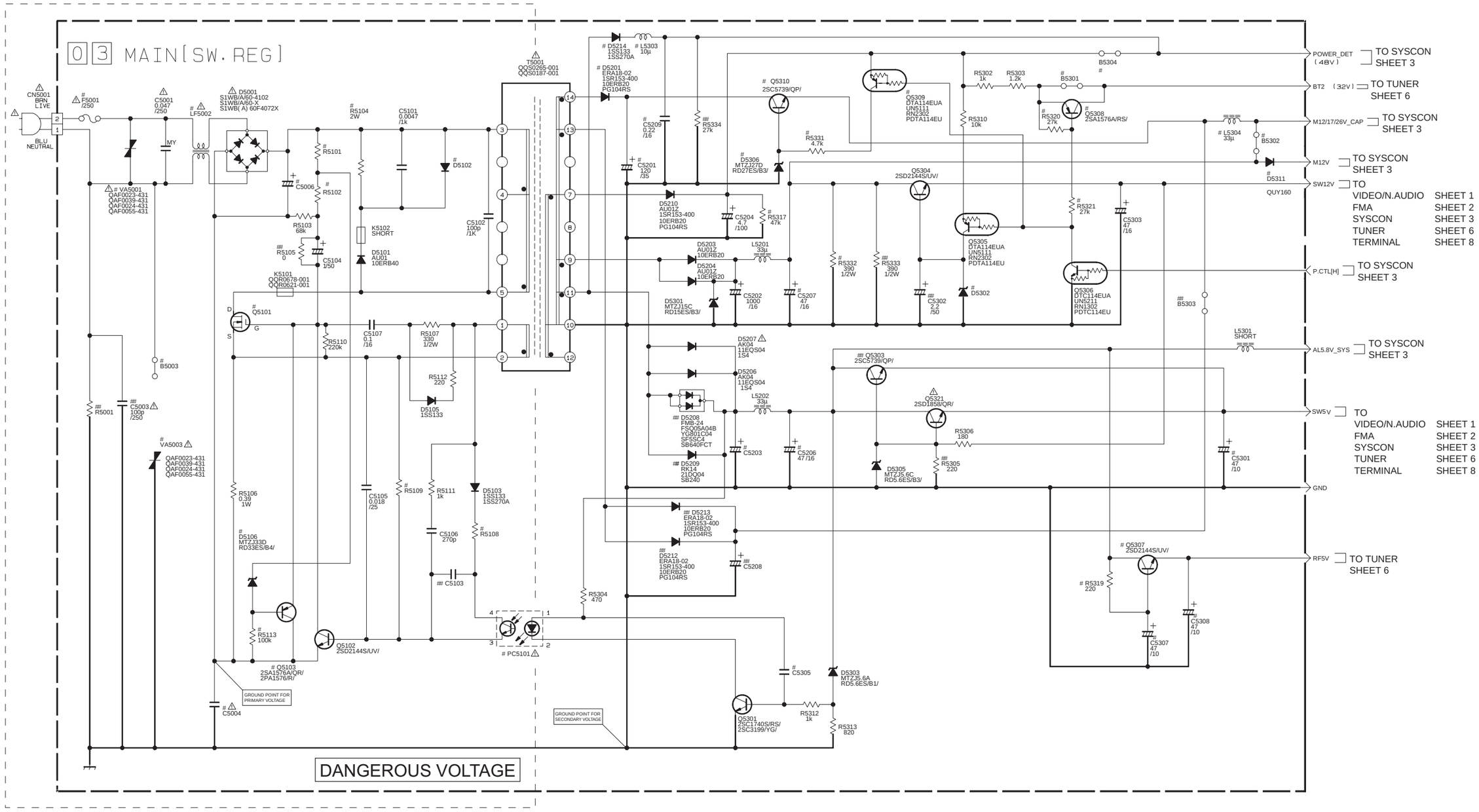
ANODE CONNECTION

No.	CONNECTION
1	CATHODE 2G, 3G, 4G, I, J
2	CATHODE 2F, 3F, 4F, K6
3	CATHODE 2E, 3E,4E, K1
4	CATHODE 2D, 3D, 4D, K4
5	CATHODE 1C, 2C, 3C, 4C, K5
6	CATHODE 1B, 2B, 3B, 4B, K2
7	CATHODE 2A, 3A, 4A, K3
8	COMMON ANODE K3, K2, K5, K4, K1, K6, I, J
9	COMMON ANODE DIGIT4
10	COMMON ANODE DIGIT3
11	COMMON ANODE DIGIT2
12	COMMON ANODE DIGIT1

ANODE CONNECTION

No.	CONNECTION
1	CATHODE 1G, 2G, 3G, 4G, I, J
2	CATHODE 1F, 2F, 3F, 4F, K6
3	CATHODE 1E, 2E, 3E, 4E, K1
4	CATHODE 1D, 2D, 3D, 4D, K4
5	CATHODE 1C, 2C, 3C, 4C, K5
6	CATHODE 1B, 2B, 3B, 4B, K2
7	CATHODE 1A, 2A, 3A, 4A, K3
8	COMMON ANODE K3, K2, K5, K4, K1, K6, I, J
9	COMMON ANODE DIGIT 4
10	COMMON ANODE DIGIT 3
11	COMMON ANODE DIGIT 2
12	COMMON ANODE DIGIT 1

■ MAIN(SW.REG) SCHEMATIC DIAGRAM



MARK ELEMENTS ARE NOT MOUNTED
DIFFERENCE TABLE

MODEL \ FUNCTION PART NO.	CURRENT CAPABILITY																		POWER SAVE			OVER VOLTAGE	POWER DETECT (AL5.8V)		53" FF/REW			BT2		140" FF/REW	STABILITY	
	F5001	VA5001	LF5002	B5003	VA5003	C5004	C5006	Q5101	R5108	R5109	PC5101	D5102	C5203	C5206	C5301	Q5307 R5319 C5308 C5307	D5302	C5207	L5304	R5101 R5102	R5104	R5317	D5106 Q5103 R5113	D5214 L5303 C5209	B5304	D5201 C5201 D5306	Q5310 R5331 R5309	D5311	B5301	Q5308 R5321	B5302	R5332	C5305
PAL	GMF51E2-2R0-J1 GMF51E2-2R0 GMF51W2-2R0-JB	X	QQR0978-001 QQR0608-001 QQR0609-001 QQR0610-001	X	X	0.0022/250	68/400	2SK2632-CB14 2SK2632 2SK2129-LT 2SK2129	1500	560	PC123Y20FZ PC123F2 ON3171/R1 LTV-817M/BC/	AU01 10ERB40 1SR153-400 ERA18-04	680/16	0	X	0	MTZJ11C RD11ES/B3/	0	0	220k	68k	X	X	X	0	0	0	0	0	X	X	0	0.22/16
NTSC (UM,UA,UB)	GMF51E2-2R0-J1 GMF51E2-2R0 GMF51W2-2R0-JB	X	QQR0978-001 QQR0608-001 QQR0609-001 QQR0610-001	X	X	0.0022/250	68/400	2SK2632-CB14 2SK2632 2SK2129-LT 2SK2129	1500	560	PC123Y20FZ PC123F5 ON3171/R1 LTV-817M/BC/	AU01 10ERB40 1SR153-400 ERA18-04	680/16	X	0	X	MTZJ10A RD10ES/B1/	0	OPEN	220k	68k	X	X	X	0	X	X	0	X	SHORT	0	X	0	0	0.22/16
NTSC (JPN)	GMF51N2-1R25-J1 GMF51N2-1R25-J6 GMF51N2-1R25-J7	0	QQR0532-001 QQR0533-001 QQR0516-001 QQR0932-001 QQR0816-001	0	0	0.0047/250	82/200	2SK2043-CB14 2SK2043	1200	1800	PC817X PS2501-1 PC817CD LTV-817M/BC/ PC817	10EDB20 1A30 ERA15-02	1000/16	X	0	X	MTZJ12A RD12ES/B1/	X	OPEN	330k	150k	0	0	0	X	X	X	SHORT	X	0	0	X	0.1/16

NOTES:UNLESS OTHERWISE SPECIFIED.
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDUCTANCE VALUES ARE IN H.
ALL CAPACITANCE VALUES ARE IN µF.

ELECTROLYTIC
CERAMIC
MYLER
NON POLAR

p20416001a_rev0

■ MAIN(TUNER) SCHEMATIC DIAGRAM

03 MAIN [TUNER]

TU6001
ANT IN ANT OUT

ASIA 4 SYS / MECOM KR

BB(RFSV)	NC(GND)	1
AUDIO_IN		2
MOD_SDA	CH_SW	3
MOD_B(RFSV)		4
MOD_SCL	CONV_CTL	5
VIDEO_IN		6
NC	NC(GND)	7
(AGC)		8
(BT)	BT	9
NC	AS	10
SCL	SCL	11
SDA	SDA	12
NC	NC	13
MB(SW5V)	MB(SW5V)	14
NC	NC	15
TU(30V)	TU(30V)	16
		17
		18
SW_1	NC	19
SW_2	NC	20
AUDIO_OUT		21
SIF_OUT		22
AFT	AFT	23
		24
MB(SW5V)	NC(OPEN)	25

TU6001
ANT IN ANT OUT

JP SANYO	UB/UM/UA LG	EF LG	EX/EY/EZ LG	
		BB(RFSV)	BB(RFSV)	26
NC		NC	AUDIO_IN	27
NC		NC	MOD_SDA	28
+B(SW5V)	+B(SW5V)		MOD_B(RFSV)	29
NC			MOD_SCL	30
NC			VIDEO_IN	31
			TU(30V)	32
		RF_AGC	RF_AGC	33
		NC	NC	34
		AS	AS	35
		SCL	SCL	36
		SDA	SDA	37
		AFT	NC	38
		MB(SW5V)	MB(SW5V)	39
		NC	NC	40
TU30V	TU(30V)	TU(30V)	TU(30V)	41
		TP	NC	42
		IF_OUT	NC	43
		SW_1	SW_1	44
		SW_2	SW_2	45
		AUDIO_OUT	AUDIO_OUT	46
		SIF_OUT	SIF_OUT	47
		AFT	AFT	48
		VIDEO_OUT	VIDEO_OUT	49

NOTES-UNLESS OTHERWISE SPECIFIED.
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDUCTANCE VALUES ARE IN H.
ALL CAPACITANCE VALUES ARE IN μF.
ELECTROLYTIC
CERAMIC
MYLER
NON POLAR

DIGITAL GND
ANALOG GND

IC6701
MSP3417D
MSP3417DG3
MSP3417G
MSP3417GQQB8V3X

CAPL_M	34	
AHVSS	35	
AGNDC	36	
NC	37	
NC	38	
ASG	39	
SC1_IN_L	40	
SC1_IN_R	41	
VREFTOP	42	
MONO_IN	43	
AVSS	44	
AVSUP	1	
ANA_IN1+	2	
ANA_IN-	3	
TESTEN	4	
XTAL_IN	5	
XTAL_OUT	6	
TP	7	
D_CTR_OUT1	8	
D_CTR_OUT0	9	
AOR_SEL	10	
STANDBYQ	11	
I2C_CL	12	
I2C_DA	13	
TP	14	
TP	15	
TP	16	
TP	17	
TP	18	
DVSUP	19	
DVSS	20	
TP	21	
RESETQ	22	
TP	23	
TP	24	
DACM_R	25	
VREF2	26	
DACM_L	27	
VREF1	28	
TP	29	
SCL_OUT_R	30	
SCL_OUT_L	31	
NC	32	
AHVSUP	33	

X6701 10.432MHz

GND, RF5V, SW5V, SW12V, BT2 → TO SW.REG SHEET 5

DEMOD[L], GND, DEMOD[R] → TO FMA/DEMOD SHEET 2

RF_VIDEO, TU_VIDEO → TO TERMINAL SHEET 8

RF_AUDIO, TU_AUDIO, GND → TO VIDEO/N.AUDIO SHEET 1

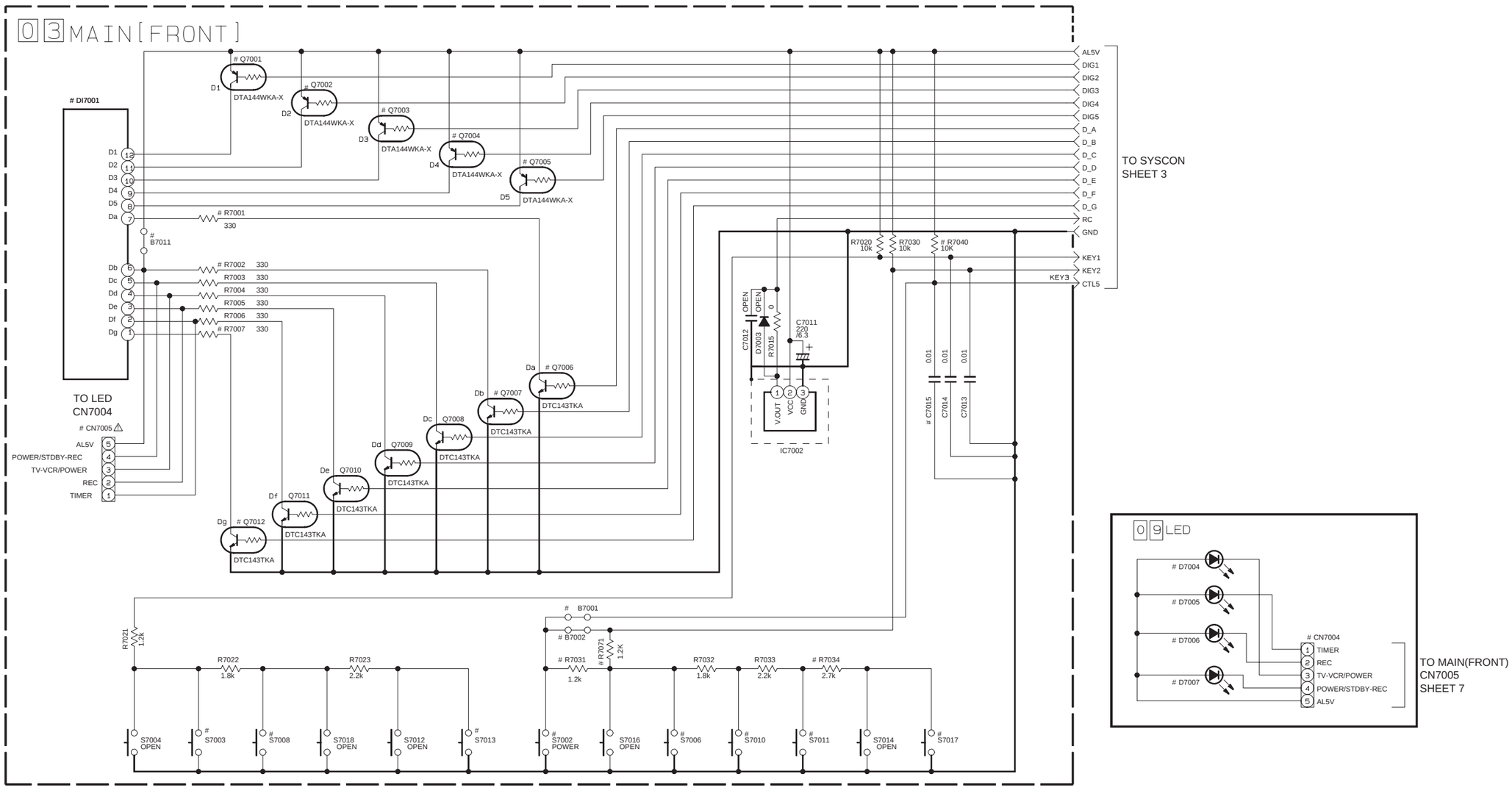
SIF, COMP → TO FMA/DEMOD SHEET 2

TO SYSCON SHEET 3: I2C_CLK, I2C_DATA, CTL1, TU_MUTE[H], CTL5, SW2/CH_SW, RF_VIDEO, CONV_CTL[H], AFC, SW1

#DIFFERENCE TABLE

		NTSC US/UM M2F1 UA	NTSC WON2 UA/UB	NTSC JP	PAL EX/EY/EZ STEREO DECODER YES	PAL EX/EY/EZ STEREO DECODER NO	PAL EF
TUNER UNIT	TU6001	GAU0336	GAU0265	GAU0335	GAU0323	GAU0323	GAU0299
RF CONVERTER	R6051-R6052	X	X	X	O	O	X
	L6002	X	X	X	1Ω	1Ω	SHORT
	R6051	X	X	X	O	O	X
	R6050・R6056	O	O	X	O	O	X
	R6054・L6050	O	O	X	X	X	X
SW5V	L6003	O	O	O	X	X	X
	L6001	X	O	X	O	O	O
AUDIO DEEMPHASIS	R6032	X	15K	X	SHORT	SHORT	SHORT
	R6033	X	10K	X	OPEN	OPEN	OPEN
	C6030	X	0.012	X	OPEN	OPEN	OPEN
	C6037	X	O	X	O	O	O
MUTE CCT	Q6031・Q6032	X	X	X	O	O	O
MONO IN	R6707・C6724	X	X	X	X	X	X
STEREO DECODER	R6707-R6715 R6719-R6721 C6707-C6709 C6713-C6717 C6719-C6721 C6723-X6701 X6701-D6704 IC6701-D6701	X	X	X	O	X	O
	B6511-B6511	X	X	X	X	O	X
OPTION JUMPER	B6001	O	X	X	X	X	X
	B6002-B6003	O	X	O	X	X	X
SIF INPUT	B6701-D6704	X	X	X	O	X	O
	L6502	X	X	X	O	X	O
	C6531	O	X	O	X	X	X
AFC	B6020	O	O	X	O	O	O
BEAT/NOISE C/N	C6013	X	X	X	O	O	O
	C6014	0.01	0.1	X	X	X	X
	C6021	O	X	X	X	X	X
	C6052	X	O	X	X	X	X
	C6055	X	O	X	X	X	X
	C6056	O	O	X	X	X	X

■ MAIN(FRONT) SCHEMATIC DIAGRAM



	HR-V510EX	HR-V210EX	HR-V515EF	HR-V415ER HR-V411AS HR-V410AG	HR-V216ER HR-V215ER HR-V210AA HR-V217AG HR-V211AS HR-V210AG	HR-P211ER HR-P111AG HR-P110AG	HR-J7020UM	HR-J7020UA	HR-J4020UA	HR-J4020UB	HR-A20K
DI7001 Q7001, Q7002, Q7003 Q7004, Q7005, Q7006 Q7007, Q7012 R7001, R7002, R7007	○	○	○	○	○	×	○	○	×	×	○
CN7005, CN7004	×	×	×	×	×	3-PIN	×	×	5-PIN	5-PIN	×
B7011	×	×	×	×	×	○	×	×	○	○	×
D7005, D7006	×	×	×	×	×	×	×	×	○	○	×
D7004, D7007	×	×	×	×	×	○	×	×	○	○	×
R7040, C7015, B7001	×	×	×	×	×	×	○	○	×	×	×
R7071	×	×	×	×	×	×	○	○	×	×	×
R7031	○	○	○	○	○	×	×	×	○	○	○
B7002	○	○	○	○	○	×	×	×	○	○	○

	S7002	S7006	S7010	S7011	S7017	S7003	S7008	S7013
HIFI	POWER	REW	REC	ST/EJ	PR+	PR-	FF	PLAY
MONO	POWER	REW	REC	ST/EJ	PR+	PR-	FF	PLAY
VCP	POWER	REW	REC	ST/EJ	SP/LP/EP	COLOR SYSTEM	FF	PLAY

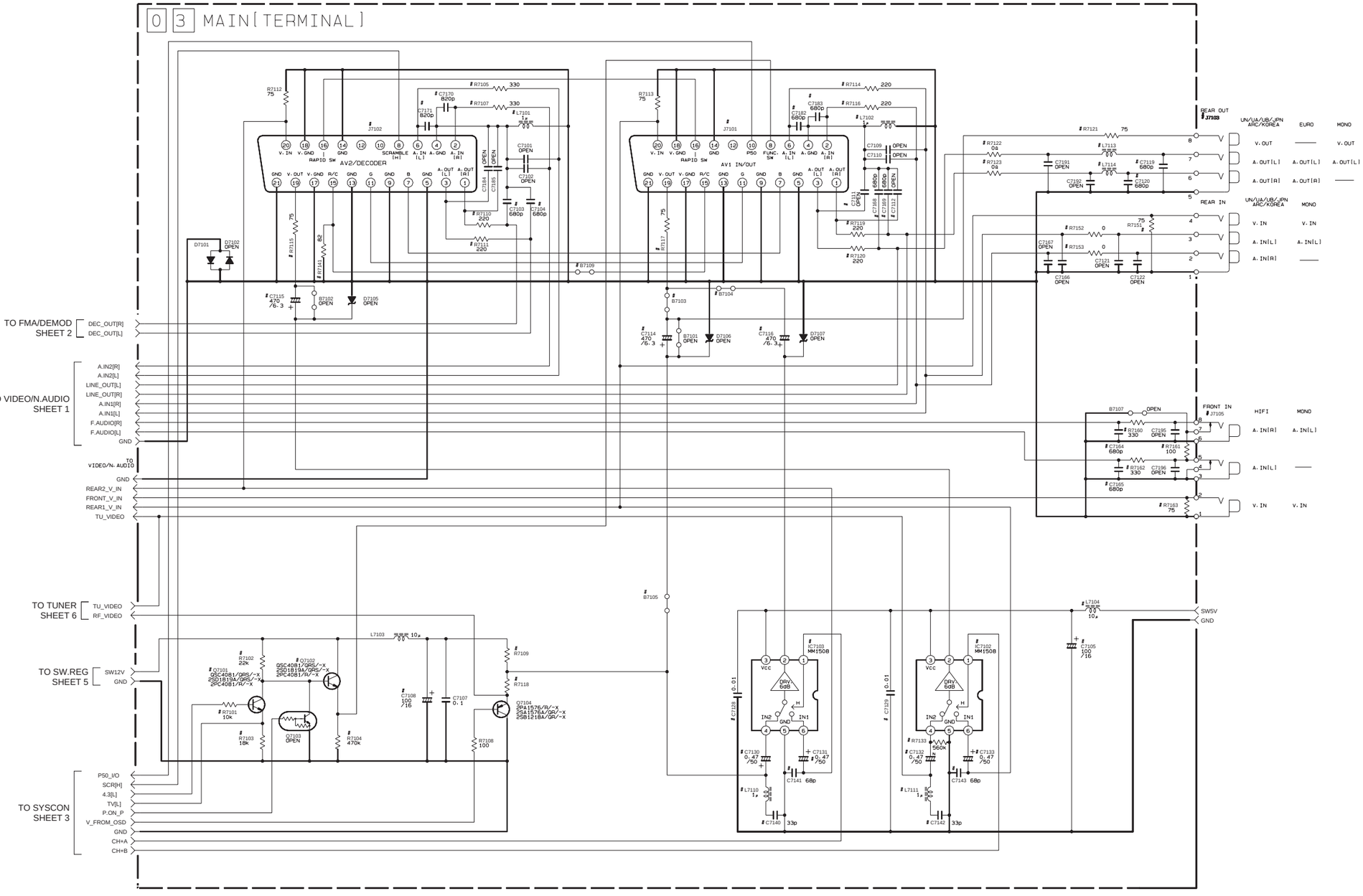
NOTES:UNLESS OTHERWISE SPECIFIED.
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDUCTANCE VALUES ARE IN H.
ALL CAPACITANCE VALUES ARE IN μF.

ELECTROLYTIC
CERAMIC
MYLER
NON POLAR

p20419001a_rev0

SHEET 7

■ MAIN(TERMINAL) SCHEMATIC DIAGRAM



AUDIO

#DIFFERENCE TABLE 1

FRONT INPUT		J7105	R INPUT		L INPUT			C7195
			R7160	C7164	R7162	R7161	C7165	C7196
EURO/ASIA	3P	QNN0524-001	0Ω	×	0Ω	×	×	×
	2P(MONO)	QNN0634-001	0Ω	×	×	×	×	×
	NO	×	×	×	×	×	×	×
JAPAN	3P(Y.W.R)	QNN0524-001	0Ω	×	0Ω	×	×	×
UK/UA	3P(BLACK)	QNN0524-02	0Ω	×	0Ω	×	×	×
UA/UB	2P(MONO)	QNN0634-002	0Ω	×	×	×	×	×

#DIFFERENCE TABLE 2

REAR IN/OUT			J7103	L INPUT		R INPUT		L OUTPUT			R OUTPUT			
				R7152	C7121 C7166	R7153	C7122 C7167	L7113	R7122	C7119	L7114	R7123	C7120	C7191 C7192
REAR IN & REAR OUT	ASIA HIFI	3P	QNN0526-001	0Ω	OPEN	0Ω	OPEN	SHORT	0Ω	×	SHORT	0Ω	×	OPEN
	ASIA MONO	2P	QNN0633-001	0Ω	OPEN	×	OPEN	SHORT	0Ω	×	×	×	×	OPEN
	UA	3P	QNN0526-001	0Ω	OPEN	0Ω	OPEN	SHORT	0Ω	×	SHORT	0Ω	×	OPEN
	UA/UB	2P	QNN0633-001	0Ω	OPEN	×	OPEN	SHORT	0Ω	×	×	×	×	OPEN
REAR OUT ONLY	EUROPE	2P-LR	QNN0632-001	×	OPEN	×	OPEN	SHORT	0Ω	×	SHORT	0Ω	×	OPEN
	UK/JAPAN	3P	QNN0586-001	×	OPEN	×	OPEN	SHORT	0Ω	×	SHORT	0Ω	×	OPEN

#DIFFERENCE TABLE 3

SCART IN/OUT(EUROPE)		AV1			AV2				EMC
		J7101	R7114 R7116 R7119 R7120 C7168 C7169 C7182 C7183	L7102	J7102	R7105 R7107 C7170 C7171	R7110 R7111 C7103 C7104	L7101	C7101 C7102 C7109 C7110 C7111 C7112 C7184 C7185
2X	WITH CH+	○	○	○	○	○	○	○	×
	WITHOUT CH+	○	○	○	○	○	×	○	×
1X		○	○	○	×	×	×	×	×
NO		×	×	×	×	×	×	×	×

VIDEO

#DIFFERENCE TABLE 4

INPUT/OUTPUT		J7101	J7102 R7112	J7103	J7105 R7163	R7113	R7117	R7121	R7151
FRONT V IN		×	×	×	○	×	×	×	×
REAR1 IN	RCA	×	×	○	×	×	×	×	○
	L-1 Per1	○	×	×	×	○	×	×	×
FRONT/REAR1 IN	RCA	×	×	○	○	×	×	×	○
	L-1 Per1	○	×	×	○	○	×	×	×
REAR2 IN	L-2 Per1	×	○	×	×	×	×	×	×
REAR OUT	RCA	×	×	○	×	×	×	×	○
	L-1 Per1	○	×	×	×	×	○	×	×

#DIFFERENCE TABLE 5

CH+	IC7102- IC7103	R7115- R7133- R7141	C7105- C7116- C7130- C7133- B7104	C7108- C7128- C7131- C7132-	C7115- C7129-	L7104	B7103- B7105- C7114	R7109	R711B
YES	○	○	○			○	×	GRE123J-471X	470
NO	×	×	×			×	○	GRE123J-331X	0

#DIFFERENCE TABLE 6

	C7108	B7105	B7109
NTSC	×	○	×
PAL-M	×	○	×
PAL-N	×	○	×
PAL/ARC	○	○	×
with SECAM	○	×	○

#DIFFERENCE TABLE 7

CH+ EMC	C7140- C7141- C7142- C7143- L7110- L7111
YES	○
NO	×

#DIFFERENCE TABLE 8

16-9	R7101- R7102- R7103- R7104- Q7101- Q7102
YES	○
NO	×

NOTES:UNLESS OTHERWISE SPECIFIED.
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDUCTANCE VALUES ARE IN H.
ALL CAPACITANCE VALUES ARE IN μF.

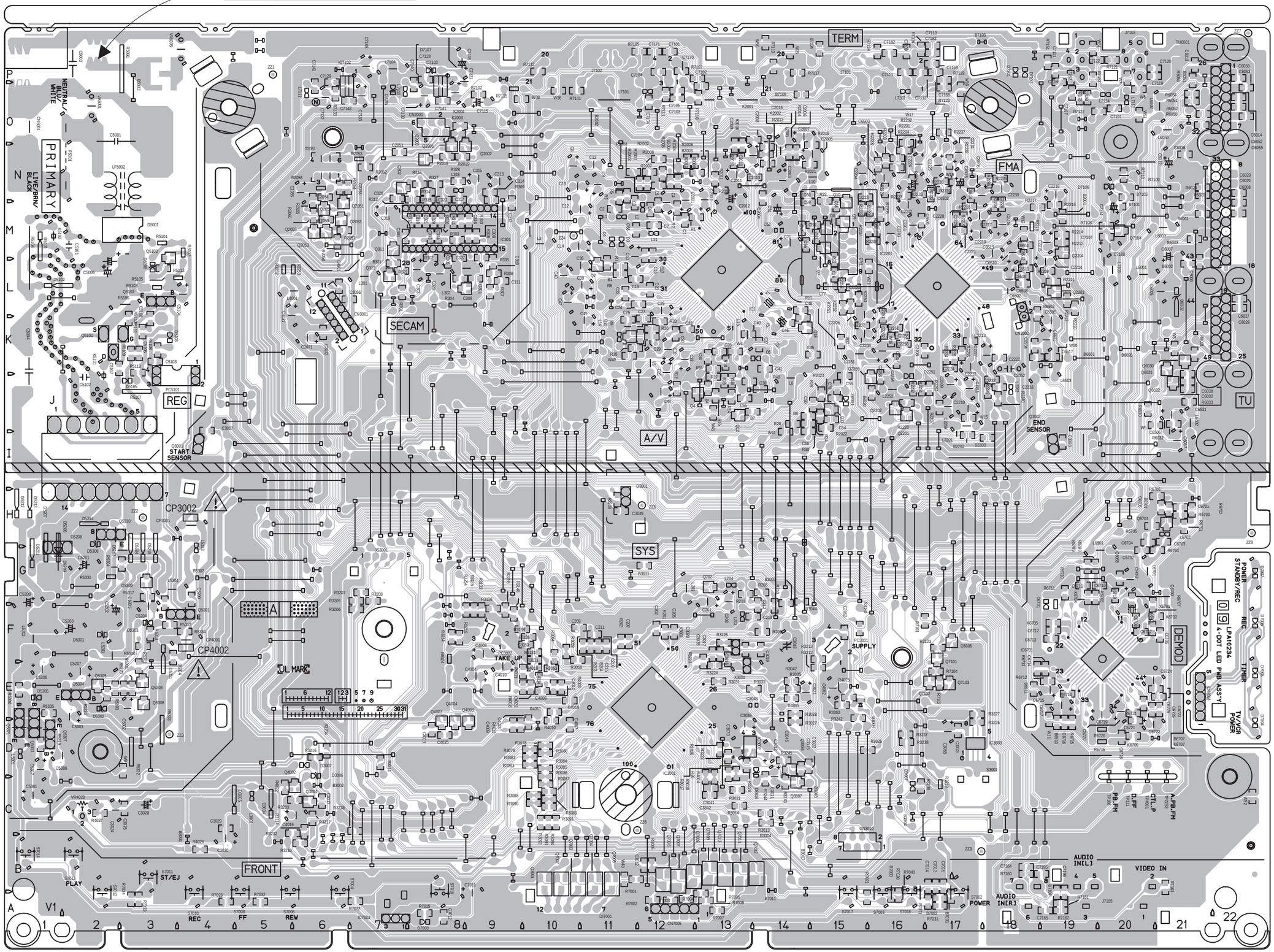
ELECTROLYTIC
CERAMIC
MYLER
NON POLAR

p10618001a_rev1

SHEET 8

■ MAIN CIRCUIT BOARD

<03> MAIN
LPB10234-001E



COMPONENT PARTS LOCATION GUIDE <MAIN> LPB10234-001E

REF.NO.	LOCATION
CAPACITOR	
C1	B C 12M
C2	B C 11M
C3	B C 11M
C4	A D 12M
C5	B C 12M
C6	B C 12M
C7	B C 12M
C8	A D 10N
C9	A D 11N
C10	A D 11M
C11	A D 11N
C12	A D 11M
C13	A D 11N
C14	A D 11M
C15	B C 12M
C17	B C 12M
C19	B C 11L
C20	B C 12L
C22	B C 11L
C24	B C 12L
C25	A D 12L
C26	A D 12K
C27	B C 12K
C29	B C 12K
C30	B C 12K
C31	A D 12K
C32	B C 12K
C33	A D 12K
C34	B C 13K
C35	B C 13K
C36	A D 11L
C37	B C 14K
C38	B C 13J
C39	A D 11L
C40	B C 13K
C41	B C 14K
C43	A D 10L
C44	A D 12J
C45	B C 15K
C46	B C 14K
C47	A D 10L
C48	B C 14K
C49	A D 11K
C50	B C 15J
C54	B C 15J
C55	B C 15J
C56	B C 14M
C57	B C 14M
C58	B C 15M
C59	B C 14M
C60	B C 14N
C61	A D 14M
C62	A D 14M
C63	B C 15M
C64	B C 15M
C65	B C 13J
C66	B C 14J
C68	B C 11M
C71	A D 14M
C75	B C 11K
C76	B C 15L
C77	B C 15L
C78	B C 15J
C201	A D 13G
C202	B C 12F
C203	A D 13G
C205	B C 12F
C207	B C 11F
C209	B C 10F
C211	B C 11F
C212	B C 14F
C213	B C 14F
C215	B C 11F
C216	B C 11F
C301	B C 7M
C302	A D 8L
C303	B C 8M
C304	B C 8M
C305	B C 8L
C307	B C 8M
C308	B C 9L
C309	B C 9M
C310	B C 9L
C311	B C 9L
C312	B C 9M
C313	A D 9N
C314	B C 9N
C315	A D 9N
C316	B C 8M
C317	B C 8N
C318	B C 8M
C319	A D 7M
C320	B C 7N
C321	B C 8M
C322	B C 8N
C323	A D 8L
C2001	A D 12M
C2002	A D 13M
C2003	A D 14N
C2004	B C 14N
C2005	A D 14N
C2006	B C 14N
C2007	A D 14O
C2008	A D 14N
C2009	B C 13N
C2010	B C 13N
C2011	A D 13N
C2012	A D 13N
C2013	B C 14N
C2016	B C 14N
C2051	B C 7N
C2052	A D 18K
C2053	B C 6N
C2054	B C 6N
C2055	A D 6N
C2201	A D 16M
C2202	A D 16M
C2203	A D 16M
C2204	A D 15N
C2205	A D 16L
C2206	A D 16K
C2207	B C 15K
C2208	B C 16K
C2209	A D 17J
C2210	A D 17J
C2211	A D 17J
C2212	A D 17K
C2213	B C 17K
C2214	A D 19L
C2215	A D 19M
C2216	A D 18M
C2217	B C 18M
C2218	A D 19N
C2219	A D 17M
C2220	A D 17M
C2221	B C 17M
C2222	B C 18K
C2223	B C 15N
C2224	B C 17K
C2225	A D 17N
C2226	A D 16N
C2227	A D 18K
C2228	B C 18M
C2229	B C 17M
C2230	A D 18N
C2231	A D 17N
C2232	B C 18J
C2233	B C 18J
C2251	B C 16L
C2252	B C 15L
C2253	B C 15L
C2254	A D 16K
C2255	B C 16K
C2256	B C 16K
C2257	B C 16K
C2258	B C 16J
C2259	A D 17J
C2261	B C 16K
C2262	B C 16K
C3007	B C 4J
C3008	B C 19I
C3011	A D 14D
C3012	B C 12B
C3013	A D 14D
C3015	B C 14D
C3016	B C 13F
C3017	B C 13F
C3018	A D 14F
C3019	B C 14F
C3020	B C 13F
C3021	A D 14E
C3022	B C 14D
C3023	B C 17D
C3024	A D 2C
C3025	B C 3C
C3028	A D 3C
C3029	B C 4C
C3030	A D 4B
C3035	B C 13F
C3036	A D 13D
C3041	B C 13C
C3042	B C 13C
C3043	A D 14E
C3045	A D 14E
C3049	B C 11H
C3052	B C 15F
C3053	B C 10F
C3055	A D 17D
C3056	B C 6L
C3070	A D 13D
C3071	A D 6K
C3072	B C 6K
C4001	B C 6L
C4002	A D 15E
C4004	A D 9E
C4006	B C 10E
C4007	B C 10D
C4008	A D 9F
C4009	B C 9D
C4010	A D 9E
C4011	B C 8D
C4012	B C 10E
C4014	B C 10E
C4016	A D 5C
C4017	B C 6C
C4019	B C 20P
C4022	B C 10E
C4024	B C 10D
C4025	B C 8D
C4031	A D 5L
C5001	A D 2O
C5003	A D 2P
C5004	A D 1K
C5006	A D 2L
C5101	A D 2M
C5102	A D 2J
C5103	B C 3K
C5104	A D 4L
C5105	B C 3K
C5106	B C 3K
C5107	B C 2K
C5201	A D 2G
C5202	A D 2G
C5203	A D 1F
C5204	A D 3F
C5206	A D 1E
C5207	A D 2E
C5208	A D 1G
C5209	B C 4G
C5301	A D 1C
C5302	A D 3E
C5303	A D 2E
C5305	B C 3G
C5307	A D 1D
C5308	A D 1D
C6005	A D 21L
C6006	B C 21L
C6007	A D 21M
C6008	B C 22M
C6012	A D 21N
C6013	B C 21P
C6014	B C 22O
C6016	B C 21N
C6020	B C 22N
C6021	B C 22M
C6027	B C 22L
C6028	B C 22L
C6032	B C 21J
C6037	A D 21I
C6038	B C 21K
C6052	B C 22O
C6053	B C 22O
C6055	B C 22O
C6056	B C 22P
C6057	A D 20G
C6058	B C 20G
C6501	B C 16M
C6502	A D 16N
C6503	A D 16N
C6504	B C 18K
C6505	A D 19K
C6506	A D 21J
C6508	B C 18L
C6509	B C 18L
C6510	A D 18M
C6511	B C 18L
C6512	B C 18M
C6513	A D 18M
C6514	B C 17N
C6515	A D 17N
C6517	B C 18K
C6531	B C 21J
C6601	A D 19K
C6602	A D 18L
C6604	B C 18M
C6605	A D 17N
C6701	B C 21H
C6702	B C 20G
C6703	B C 21H
C6704	B C 20H
C6705	B C 21H
C6706	B C 21F
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C6708	B C 20F
C6709	B C 20G
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C6711	B C 19G
C6712	B C 19F
C6713	B C 19F
C6714	B C 19E
C6715	A D 19E
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C6717	A D 19E
C6718	B C 20D
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C6727	A D 20G
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C7013	B C 17B
C7014	B C 17B
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C7103	B C 12O
C7104	B C 12O
C7105	A D 7P
C7107	B C 20M
C7108	A D 20M
C7109	B C 16P
C7110	B C 17P
C7111	B C 16P
C7112	B C 16P
C7114	A D 20M
C7115	A D 9O
C7116	A D 8P
C7119	B C 20P
C7120	B C 20P
C7121	B C 19P
C7122	B C 19P
C7128	B C 8P
C7129	B C 6P
C7130	A D 8O
C7131	A D 8O
C7132	A D 6O
C7133	A D 7O
C7140	B C 8P
C7141	B C 8O
C7142	B C 6P
C7143	B C 6O
C7164	B C 18B
C7165	B C 19A
C7166	B C 19P
C7167	B C 19O
C7168	B C 17P
C7169	B C 17P
C7170	B C 12P
C7171	B C 12P
C7182	B C 16P
C7183	B C 17P
C7184	B C 12P
C7185	B C 12O
C7191	B C 20O
C7192	B C 19O
C7195	B C 19B
C7196	B C 19A
CONNECTOR	
CN1	A D 15M
CN2001	A D 8O
CN2002	A D 18L
CN3001	A D 6L
CN3010	A D 16B
CN5001	A D 1O
CN7004	A D 21E
CN7005	A D 12A
DIODE	
D3	A D 11M
D4	A D 11M
D5	A D 14K
D2001	A D 15J
D2251	A D 16J
D3001	A D 11H
D3002	A D 6D
D3004	A D 5C
D3005	A D 4C
D3006	A D 6D
D3007	A D 16C
D3016	A D 14D
D4003	B C 15E
D5001	B C 3M
D5101	A D 1L
D5102	A D 2L
D5103	A D 3K
D5105	A D 2J
D5106	A D 3L
D5201	A D 1H
D5203	A D 3H
D5204	A D 3H
D5206	A D 1H
D5207	A D 1H
D5208	A D 1G
D5209	A D 1H
D5210	A D 3H
D5212	A D 1I
D5213	A D 1I
D5214	A D 2H
D5217	A D 2H
D5218	A D 2H
D5219	A D 2H
D5220	A D 2H
D5221	A D 2H
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D5231	A D 2H
D5232	A D 2H
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D5234	A D 2H
D5235	A D 2H
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D5307	A D 2H
D5308	A D 2H
D5309	A D 2H
D5310	A D 2H
D5311	A D 2H
D6002	A D 21K
D6701	A D 19F
D7003	A D 8A
D7004	A D 22D
D7005	A D 22E
D7006	A D 22F
D7007	A D 22G
D7101	A D 18P
D7102	A D 18P
D7105	A D 7P
D7106	A D 20N
D7107	A D 8P
IC	
IC1	B C 13L
IC301	A D 7M
IC2201	B C 17L
IC3001	B C 12E
IC3002	B C 13D
IC3003	B C 17D
IC6701	B C 20F
IC7002	A D 7A
IC7102	B C 6P
IC7103	B C 8P
COIL	
L1	A D 11M
L2	A D 12N
L3	A D 10M
L5	A D 12K
L6	A D 14J
L7	A D 14K
L10	A D 15N
L11	A D 12M
L14	A D 11K
L15	A D 13K
L201	A D 12G
L203	A D 13F
L204	A D 13G
L301	A D 7L
L302	A D 9L
L303	A D 9N
L2001	A D 14O
L2201	A D 17J
L2202	A D 18J
L2251	A D 15K
L2252	A D 16J
L3001	A D 5C
L4001	A D 5L
L5201	A D 2F
L5202	A D 1F
L5301	A D 1D
L5303	A D 4H
L5304	A D 3G
L6001	A D 20L
L6002	A D 21O
L6003	A D 21M
L6050	A D 21O
L6501	A D 20G
L6502	A D 21J
L6503	A D 18J
L6701	A D 20G
L6702	A D 21H
L7101	A D 12O
L7102	A D 16O
L7103	A D 20L
L7104	A D 7P
L7110	A D 7P
L7111	A D 6P
L7113	A D 20O
L7114	A D 19O
TRANSISTOR	
Q2	B C 11L
Q4	B C 13J
Q7	B C 15M
Q8	B C 15M
Q9	B C 15M
Q10	B C 15N
Q11	B C 15J
Q12	B C 13J
Q15	B C 11K
Q18	B C 14K
Q202	B C 13G
Q301	B C 9L
Q302	B C 7N
Q311	B C 7M
Q312	B C 7L
Q2001	B C 8N
Q2002	B C 9N
Q2003	B C 8N
Q2006	B C 13N
Q2051	B C 6M
Q2052	B C 6M
Q2055	B C 6M
Q2056	B C 6M
Q2101	B C 6M
Q2102	B C 6M
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Q2104	B C 6M
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Q2106	B C 6M
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Q2110	B C 6M
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Q2219	B C 6M
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Q2221	B C 6M
Q2222	B C 6M
Q2223	B C 6M
Q2224	B C 6M
Q2225	B C 6M
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Q2227	B C 6M
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Q2230	B C 6M
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Q2233	B C 6M
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Q2256	B C 6M
Q2257	B C 6M
Q2258	B C 6M
Q2259	B C 6M
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Q2261	B C 6M
Q2262	B C 6M
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Q2274	B C 6M
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Q2276	B C 6M
Q2277	B C 6M
Q2278	B C 6M
Q2279	B C 6M
Q2280	B C 6M
Q2281	B C 6M
Q2282	B C 6M
Q2283	B C 6M
Q2284	B C 6M
Q2285	B C 6M
Q2286	B C 6M
Q2287	B C 6M
Q2288	B C 6M
Q2289	B C 6M
Q2290	B C 6M
Q2291	B C 6M
Q2292	B C 6M
Q2293	B C 6M
Q2294	B C 6M
Q2295	B C 6M
Q2296	B C 6M
Q2297	B C 6M
Q2298	B C 6M
Q2299	B C 6M
Q2300	B C 6M
Q2301	B C 6M
Q2302	B C 6M
Q2303	B C 6M
Q2304	B C 6M
Q2305	B C 6M
Q2306	B C 6M
Q2307	B C 6M
Q2308	B C 6M
Q2309	B C 6M
Q2310	B C 6M
Q2311	B C 6M
Q2312	B C 6M
Q2313	B C 6M
Q2314	B C 6M
Q2315	B C 6M
Q2316	B C 6M
Q2317	B C 6M
Q2318	B C 6M
Q2319	B C 6M
Q2320	B C 6M
Q2321	B C 6M
Q5101	A D 2K
Q5102	A D 1M
Q5103	B C 20F
Q5104	B C 19G
Q5105	B C 19G
Q5106	B C 19G
Q5107	B C 19F
Q5108	B C 20D
Q5109	B C 20N
Q5110	B C 17O
Q5111	B C 17O
Q5112	B C 20P
Q5113	B C 20P
Q5114	B C 20Q
Q5115	B C 19P
Q5116	B C 19P
Q5117	B C 14P
Q5118	B C 20N
Q5119	B C 19O
Q5120	B C 12O
Q5121	B C 10P
Q5122	B C 14P
Q5123	B C 16P
Q5124	B C 16P
Q5125	B C 16P
Q5126	B C 19A
Q5127	B C 19A
Q5128	B C 21B
OTHER	
CP3001	A D 4H
CP3002	B C 4H
CP4001	A D 4F
CP4002	B C 4F
DI7001	A D 11A
F5001	A D 2N
FC5001	A D 2O
FC5002	A D 2N
J7101	A D 15P
J7102	A D 11P
J7103	A D 20Q
J7105	A D 19A
JS3001	A D 7G
K2001	B C 14O
K2002	B C 14N
K2003	B C 8O
K2004	B C 8O
K2251	B C 15L
K2252	B C 15L
K2253	B C 15L
K5101	A D 2K
K5102	A D 1M
K6701	B C 20F
K6702	B C 21F
K6703	B C 19G
K6704	B C 19G
K6705	B C 19F
K6706	B C 20D
K6707	B C 21E
LF5002	A D 3N
PC0932	B C 3P
PC01402	A D 2L
PC01907	A D 15L
PC3001	A D 15F
PC3002	A D 9F
PC5101	A D 4K
S3001	A D 17C
S7002	A D 17B
S7003	A D 16B
S7004	A D 6B
S7006	A D 5B
S7008	A D 5B
S7010	A D 4B
S7011	A D 3B
S7012	A D 2B
S7013	A D 2B
S7014	A D 1B
S7016	A D 16B
S7017	A D 15B
S7018	A D 8B
T2051	A D 6N
T5001	A D 3H
TP106	A D 20C
TP111	A D 20C
TP2253	A D 21C
TP4001	A D 20C
TU6001	A D 22P
VA5001	A D 2O
VA5003	A D 4P
VR4028	A D 2C
X1	A D 14L
X2	A D 14K
X3001	A D 13E
X3002	A D 13F
X6701	A D 20F

■ VOLTAGE CHARTS

<MAIN>

MODE	PIN NO.	REC	PLAY
IC1			
	1	0	0
	2	0	0
	3	0	0
	4	4.4	4.4
	5	2.0	2.1
	6	2.5	2.5
	7	2.8	2.8
	8	1.8	1.3
	9	1.8	1.3
	10	2.3	1.9
	11	2.6	3.0
	12	1.5	0.6
	13	0	0
	14	2.7	2.4
	15	2.8	2.8
	16	0	2.9
	17	2.7	2.7
	18	1.9	1.9
	19	2.8	2.8
	20	0	0
	21	2.8	2.8
	22	5.0	5.1
	23	2.3	2.3
	24	0	0.2
	25	0	0
	26	0	2.8
	27	0	0.1
	28	0	0
	29	2.4	2.3
	30	2.8	2.9
	31	0	0.3
	32	2.3	2.3
	33	2.0	2.1
	34	1.8	1.7
	35	3.0	3.0
	36	2.3	2.3
	37	3.0	3.0
	38	2.1	0
	39	1.4	1.4
	40	2.0	0.1
	41	2.7	2.5
	42	1.9	2.0
	43	2.1	2.1
	44	0	0
	45	3.2	3.2
	46	3.2	3.2
	47	0	5.1
	48	0	0
	49	3.3	3.3
	50	5.1	5.1
	51	2.1	2.0
	52	5.1	5.1
	53	2.6	2.6
	54	0	0
	55	1.9	2.0
	56	0	0
	57	2.1	2.1
	58	0	2.3
	59	5.0	5.1
	60	5.0	5.1
	61	0	0
	62	2.2	2.2
	63	2.2	2.2
	64	2.6	2.6
	65	2.2	2.2
	66	2.6	2.6
	67	0.1	0.1
	68	1.2	1.2
	69	1.9	1.9
	70	2.7	1.0
	71	2.2	2.1
	72	0	0
	73	4.5	4.5
	74	4.8	4.6
	75	2.7	2.7
	76	2.2	0
	77	2.8	2.8
	78	0	0
	79	0.5	0
	80	2.5	2.5
	81	5.0	0
	82	0	0
	83	0	0
	84	5.0	0
	85	2.4	2.3
	86	2.4	0
	87	0	2.3
	88	0	0
	89	0	0
	90	0	0
	91	0	0
	92	5.0	0
	93	0	0.1
	94	0.1	0.1
	95	0	0
	96	2.5	2.5

MODE	PIN NO.	REC	PLAY
	97	0	0
	98	2.2	2.5
	99	0	0
	100	2.5	2.5
IC2201			
	1	2.4	2.4
	2	0	0
	3	2.4	2.4
	4	0	0
	5	0	0
	6	0	2.5
	7	0	2.1
	8	0	0
	9	0	0
	10	0	0
	11	0	0
	12	0	0
	13	0	0
	14	0	0
	15	0	0
	16	2.5	2.5
	17	0.5	0.5
	18	2.5	2.5
	19	2.5	2.5
	20	0	0.6
	21	2.5	0
	22	2.6	0.7
	23	0	0
	24	2.6	0.6
	25	5.0	5.1
	26	2.6	0
	27	0	2.6
	28	4.3	2.5
	29	3.9	1.8
	30	3.7	1.7
	31	0.9	0
	32	2.5	2.5
	33	2.5	2.6
	34	0	0.6
	35	2.5	2.5
	36	0	0
	37	1.7	1.7
	38	0	0
	39	0	0
	40	5.1	0
	41	0	0
	42	4.4	4.4
	43	4.3	4.4
	44	3.3	3.3
	45	0	0
	46	4.9	4.9
	47	2.5	2.6
	48	2.5	2.5
	49	0.2	0.2
	50	0.2	0.2
	51	0	0
	52	0	0
	53	4.5	4.6
	54	0	0
	55	0	0
	56	0	0
	57	4.6	4.6
	58	8.4	8.3
	59	4.6	4.6
	60	0.1	0.3
	61	2.6	0
	62	2.4	0
	63	4.6	4.6
	64	4.7	4.7
IC3001			
	1	-	-
	2	-	-
	3	5.0	4.9
	4	4.2	4.3
	5	4.9	4.9
	6	0.9	0
	7	0.9	0.9
	8	0	0.9
	9	0.9	0
	10	1.8	0
	11	0	0
	12	0.8	4.5
	13	0	0
	14	0	0
	15	0	0
	16	0	0
	17	4.8	4.6
	18	4.6	4.6
	19	0	0
	20	4.4	0
	21	0	0
	22	5.0	4.9
	23	2.4	2.5
	24	0	0
	25	4.9	4.9
	26	0	2.4
	27	4.8	0

MODE	PIN NO.	REC	PLAY
	28	4.5	0
	29	0	0
	30	0	0
	31	4.2	4.2
	32	4.4	4.4
	33	2.6	2.6
	34	2.5	2.5
	35	0	3.0
	36	4.8	4.9
	37	2.3	2.4
	38	0	2.3
	39	0	0
	40	2.0	2.0
	41	0	2.4
	42	0	0
	43	0	0
	44	0	4.6
	45	0	0
	46	0	0
	47	1.8	1.7
	48	0	0
	49	1.7	1.7
	50	0	2.5
	51	5.1	5.1
	52	2.6	2.6
	53	2.5	2.5
	54	2.5	2.5
	55	2.2	2.1
	56	4.9	4.9
	57	4.7	4.7
	58	4.8	0
	59	4.7	4.7
	60	0	0
	61	2.5	2.4
	62	0	0
	63	0

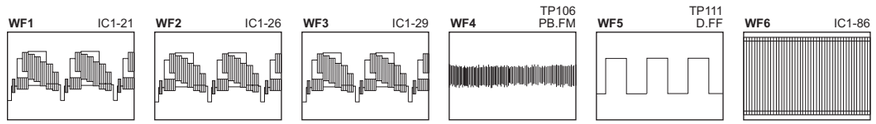
■ CPU PIN FUNCTION

<SYSCON IC3001>

PIN NO.	LABEL	IN/OUT	FUNCTION
1	SP_FG	IN	DETECTION SIGNAL FOR SUPPLY REEL ROTATION/TAPE REMAIN
2	TU_FG	IN	DETECTION SIGNAL FOR TAKE-UP REEL ROTATION/TAPE REMAIN
3	P50_IN	IN	CONTROL SIGNAL FOR TV LINK
4	SW1/KEY3	OUT	TUNER SYSTEM MODE:H/
5	RC	IN	REMOTE CONTROL DATA INPUT
6	D_A	OUT	LED DRIVE
7	D_B	OUT	LED DRIVE
8	D_C	OUT	LED DRIVE
9	D_D	OUT	LED DRIVE
10	D_E	OUT	LED DRIVE
11	D_F	OUT	LED DRIVE
12	D_G	OUT	LED DRIVE
13	P50_OUT	OUT	CONTROL SIGNAL FOR TV LINK
14	SECAM[H]/R-Y_REV	IN	SECAN MODE :H/
15	NREC[H]	OUT	NORMAL AUDIO REC MODE CONTROL SIGNAL (REC:H)
16	P.ON_P	OUT	P.ON_PULSE(H)
17	12C_DATA_A/V	IN/OUT	SERIAL DATA TRANSFER CLOCK FOR THE VIDEO /AUDIO IC
18	12C_CLK_A/V	OUT	SERIAL DATA TRANSFER OUTPUT FOR THE VIDEO /AUDIO IC
19	SP_SHORT[H]	OUT	MODE SELECT
20	LP/EP_SHOR[H]	OUT	MODE SELECT
21	A.MUTE[H]/SB_GAIN	OUT	AUDIO MUTE CONTROL (MUTE ON:H)/VOLTAGE CONTROL SIGNAL FOR VIDEO FREQUENCY RESPONSE
22	REC_SAFETY	IN	REC SAFETY SWITCH DETECT (SW ON:L)
23	D.FF	OUT	ROTATION DETECTION SIGNAL FOR DRUM MOTOR/ TIMING CONTROL SIGNAL FOR REC
24	V.PULSE	OUT	V.PULSE ADDITION TIMING CONTROL
25	RESET	-	RESET TERMINAL (RESET ON:L)
26	A.FF	OUT	AUDIO FF OUTPUT
27	N.REC_ST[H]	OUT	NORMAL AUDIO SOUND RECORDING START
28	H.REC_ST[H]	OUT	NORMAL AUDIO SOUND RECORDING START
29	TV[L]	OUT	NC
30	S_DET	IN	S-VHS DETECT (DETECT ON : H)
31	12C_DATA	IN/OUT	SERIAL DATA TRANSFER OUTPUT FOR MEMORY IC
32	12C_CLK/TEST	OUT	SERIAL DATA TRANSFER CLOCK FOR MEMORY IC
33	CAP_CTL_V	OUT	CAPSTAN MOTOR CONTROL
34	DRUM_CTL_V	OUT	DRUM MOTOR CONTROL
35	SB_GAIN/A.MUTE[H]	OUT	VOLTAGE CONTROL SIGNAL FOR VIDEO FREQUENCY RESPONSE/ AUDIO MUTE CONTROL(MUTE ON:H)
36	VDD	-	SYSTEM POWER
37	X_OUT	-	MAIN SYSTEM CLOCK (14MHz)
38	X_IN	-	MAIN SYSTEM CLOCK (14MHz)
39	VSS	-	GND
40	XC_IN	-	TIMER CLOCK(32KHz)
41	XC_OUT	-	TIMER CLOCK(32KHz)
42	CLK_SEL	IN	CLOCK SELECT FOR FLASH WRITER
43	CH_SW/SW2	IN	TUNER SYSTEM MODE:L /CHANNEL SWITCHING SIGNAL
44	TU_MUTE[H]	OUT	TUNER VIDEO CONTROL (MUTE:H)
45	OSD.S_IMPOSE	OUT	SIGNAL IMPOSE FOR OSD SCREEN
46	CONV_CTL[H]	OUT	R/F CONVERTER ON/OFF CONTROL
47	VIDEO_OSD_OUT	OUT	COMPOSITE VIDEO SIGNAL OUTPUT
48	VSS2	-	GND
49	V_TO_OSD	IN	COMPOSITE VIDEO SIGNAL INPUT
50	SYN_IN	IN	COMPOSITE SYNC/HORIZONTAL SYNC
51	VDD2	-	SYSTEM POWER
52	AFCC	OUT	AFC CLOCK (SYNC SEPARATOR FOR OSD / EXTERNAL CIRCUIT FOR AFC)
53	AFCLPF	IN	FILTER OUTPUT FOR HORIZONTAL SYNCHRONIZING OF OSD CHARACTER
54	FSCI	IN	FSC INPUT FOR OSD
55	FSCLPF	IN/OUT	FILTER OUTPUT FOR FSC OF OSD CHARACTER
56	HS_FR	OUT	HIGH SPEED FF/REW CONTROL
57	CTL_GAIN	OUT	CONTROL AMP OUT FREQUENCY RESPONSE SWITCHING
58	4:3[L]	OUT	ASPECT SELECT
59	P.CTL[H]	OUT	CONTROL SIGNAL FOR SWITCHING POWER SUPPLY
60	EE[L]/MODEL_OPTION2	OUT	EE MODE : L/
61	LM_F/R/S	OUT	LOADING MOTOR DRIVE
62	CAP.M_F/R	OUT	CAPSTAN MOTOR REVERSE CONTROL (FWD:L/REV:H)
63	CH+A/MODEL_OPTION2	OUT	AV1 OUTPUT SWITCH CONTROL
64	CH+B/MODEL_OPTION3	OUT	AV2 OUTPUT SWITCH CONTROL
65	D.FG_IN	IN	DRUM FG PULSE INPUT
66	EEPROM_DET/SUB_CLK_DET	-	SETTING OF EEPROM (ENABLE:L,DISABLE:H) /
67	C.FG_AMP_OUT	OUT	CAPSTAN FG PULSE AMO OUT
68	C.FG_IN	IN	CAPSTAN FG PULSE INPUT
69	AMP_VREF_OUT	OUT	CTL PULSE AMP REFFERENCE VOLTAGE OUTPUT
70	AMP_VREF_IN	IN	CTL PULSE AMP REFFERENCE VOLTAGE INPUT
71	AVSS	-	GND
72	AMP_C	-	CAPACITO CONNECT TERMINAL FOR CTL PULSE AMP CIRCUIT
73	AVCC	IN/OUT	SYSTEM POWER
74	CTL[+]	-	CTL(+) SIGNAL
75	CTL[-]	IN/O UT	CTL(-) SIGNAL
76	CTL_AMP_OUT	OUT	CTL PULSE OUTPUT
77	PROTECT	IN	DETECTION SIG
79	AFC/JUST_CLK	IN	TUNING CHECK/JUST CLK INPUT
80	LED/PAL_PB[H]	IN	NC / PAL PLAYBACK MODE:H
81	A.ENV/ND[L]	IN	AUDIO PB FM ENV.INPUT/NON HiFi MODE:L
82	RF_AGC	IN	CHANGES IN ATS+IC OUTPUT AS CAUSED BY CHANGES IN RECEIVER SENSITIVITY WHEN THE SAME CHANNEL IS RECEIVED MORE THAN ONCE ARE INPUT.
83	VIDEO_ENV	IN	AUTO TRACKING DETECT/INPUT THE AVERAGE OF PLAYBACK VIDEO SIGNAL
84	MESEC_DET/SW_P_ADJ	OUT	MESECAM:H/
85	END_SENSOR	IN	END SENSOR
86	SECAN_DET/KILLER_DET	IN	SECAM MODE DETECT/COLOR SIGNAL DISTINCTION
87	SCR[H]	IN	SCRAMBLE CONTROL INPUT (SCRAMBLE:H)
88	KEY1	IN	OPERATION CONTROL SIGNAL
89	KEY2	IN	OPERATION CONTROL SIGNAL
90	POWER_DET	IN	DETECTION SIGNAL FOR POWER DOWN OF AC POWER SUPPLY
91	LSA	IN	MECHANISM MODE DETECT (A)
92	LSB	IN	MECHANISM MODE DETECT (B)
93	LSC	IN	MECHANISM MODE DETECT(C)
94	LSD	IN	MECHANISM MODE DETECT (D)
95	DIG1	OUT	LED DRIVE
96	DIG2	OUT	LED DRIVE
97	DIG3	OUT	LED DRIVE
98	DIG4	OUT	LED DRIVE
99	DIG5	OUT	LED DRIVE
100	NC	IN/OUT	NOT USED

■ WAVEFORMS

<VIDEO/N.AUDIO>



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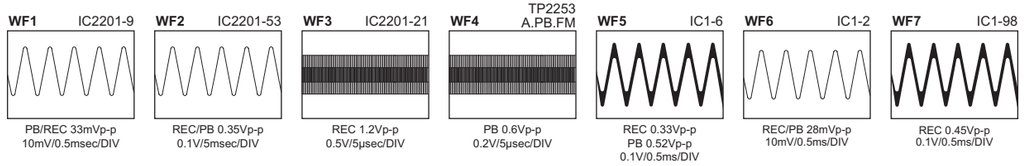
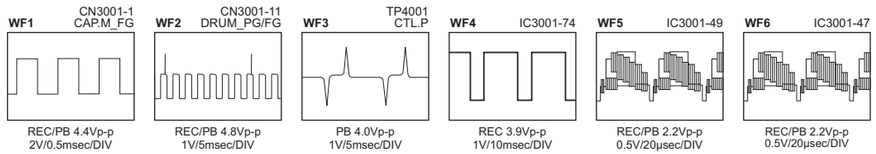
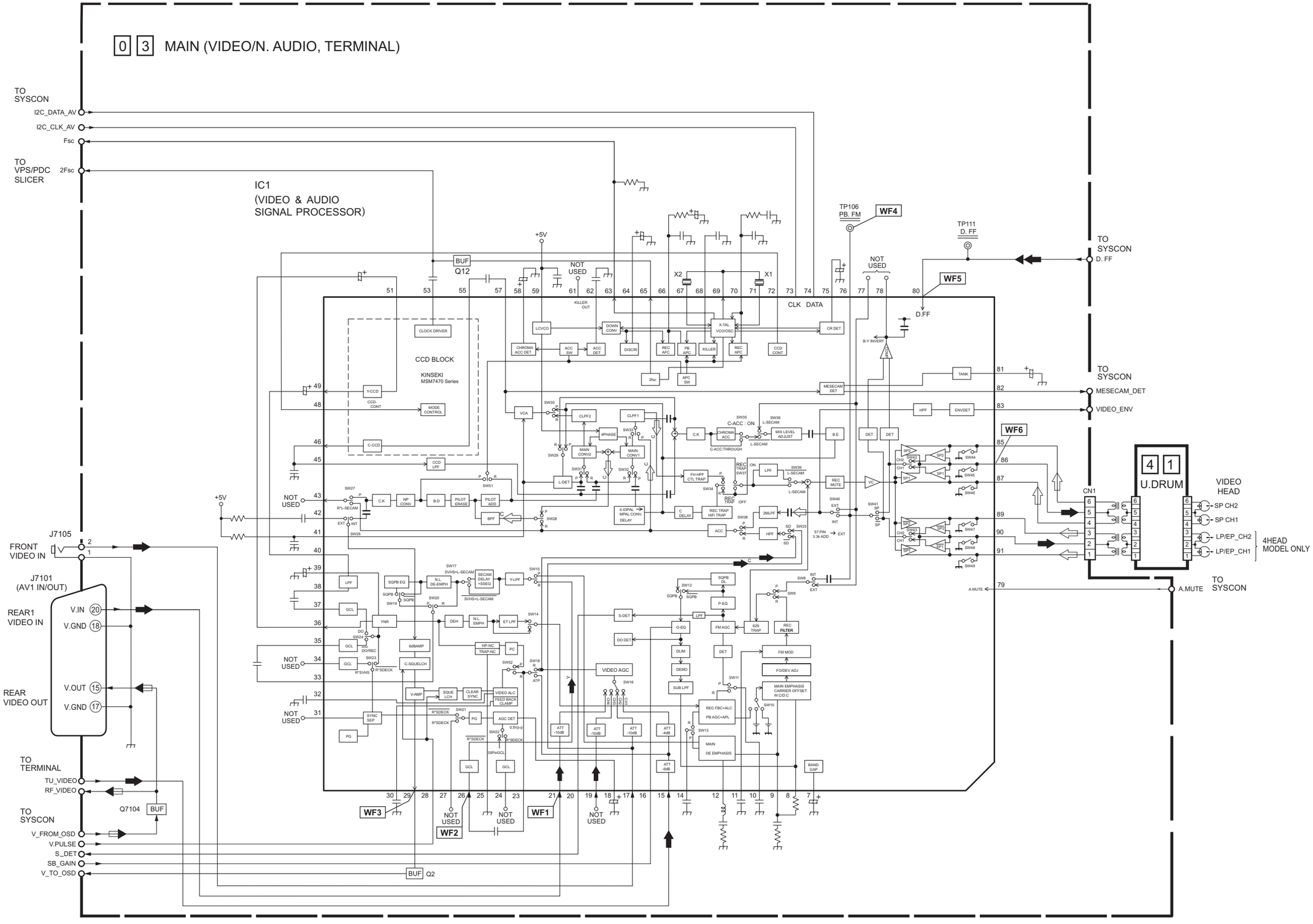


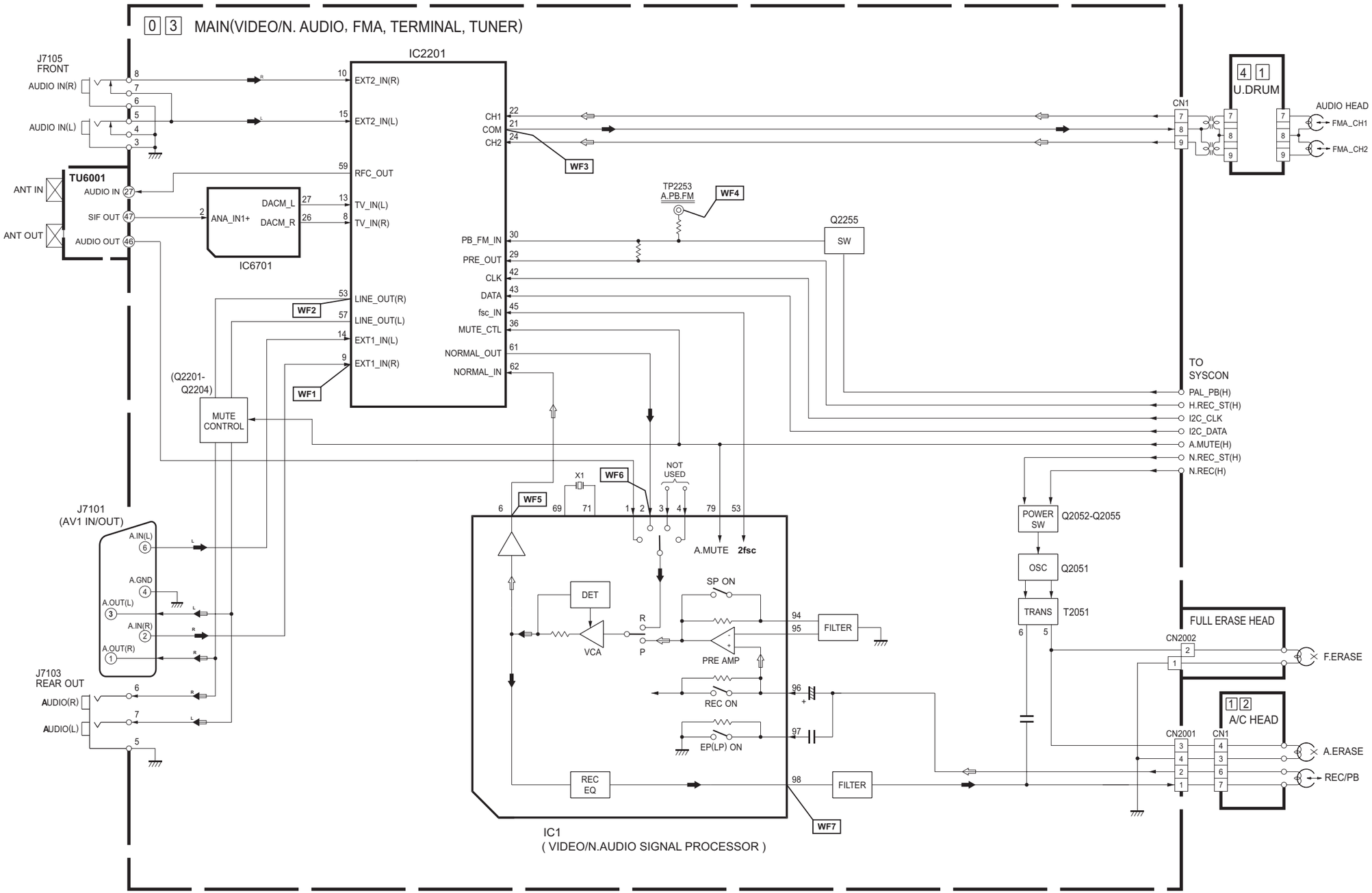
<SYSTEM CONTROL>



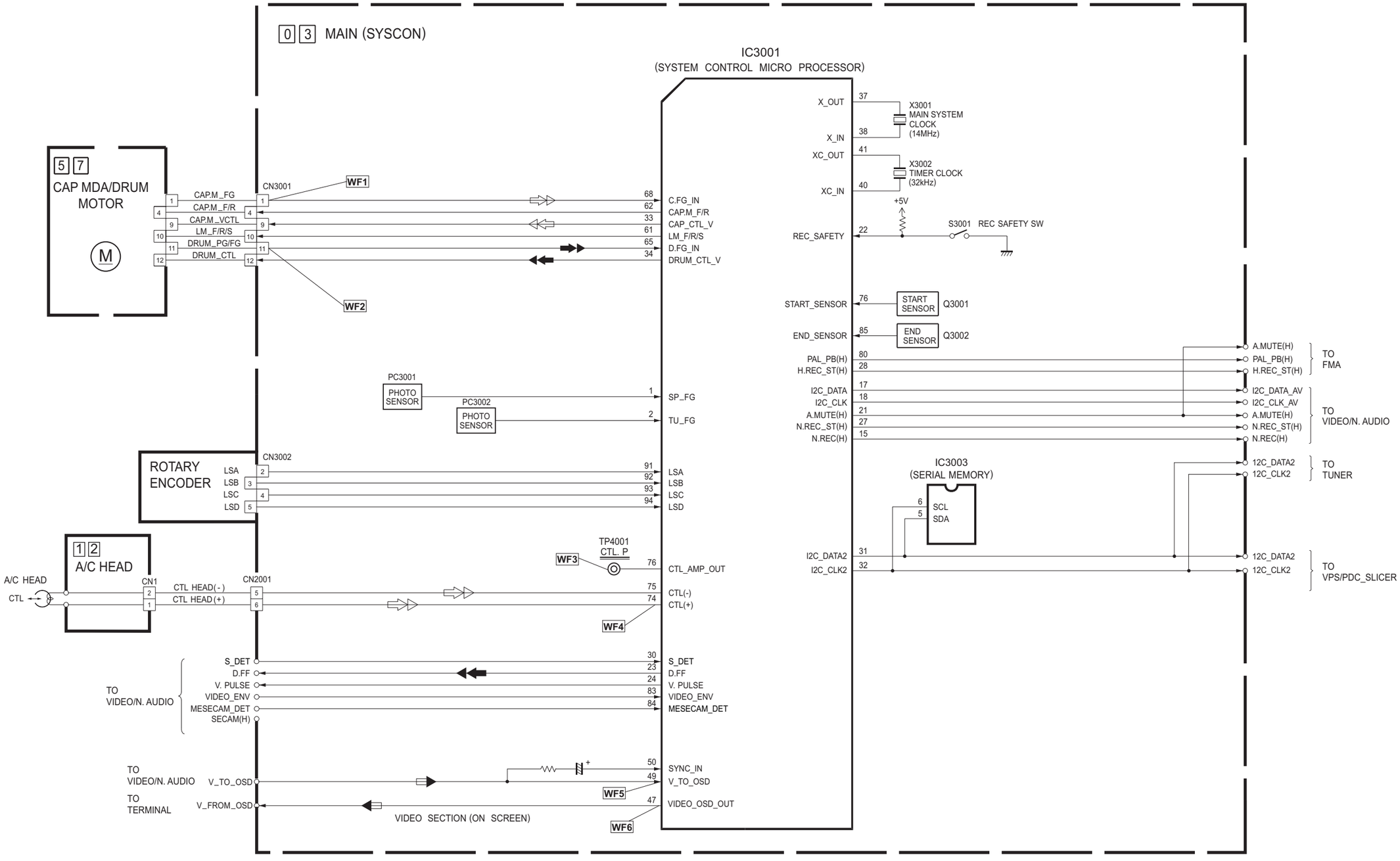
■ VIDEO/N.AUDIO BLOCK DIAGRAM



■ AUDIO BLOCK DIAGRAM



■ SYSTEM CONTROL BLOCK DIAGRAM



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(No.YD007)

Printed in Japan
WPC

PARTS LIST

[HR-J4020UA, HR-J4020UB, HR-J7020UA, HR-J7020UM]

* SAFETY PRECAUTION
  Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.
* BEWARE OF BOGUS PARTS
  Parts that do not meet specifications may cause trouble in regard to safety and performance. We recommend that genuine JVC parts be used.
* (x_) in a description column shows the number of the used part.

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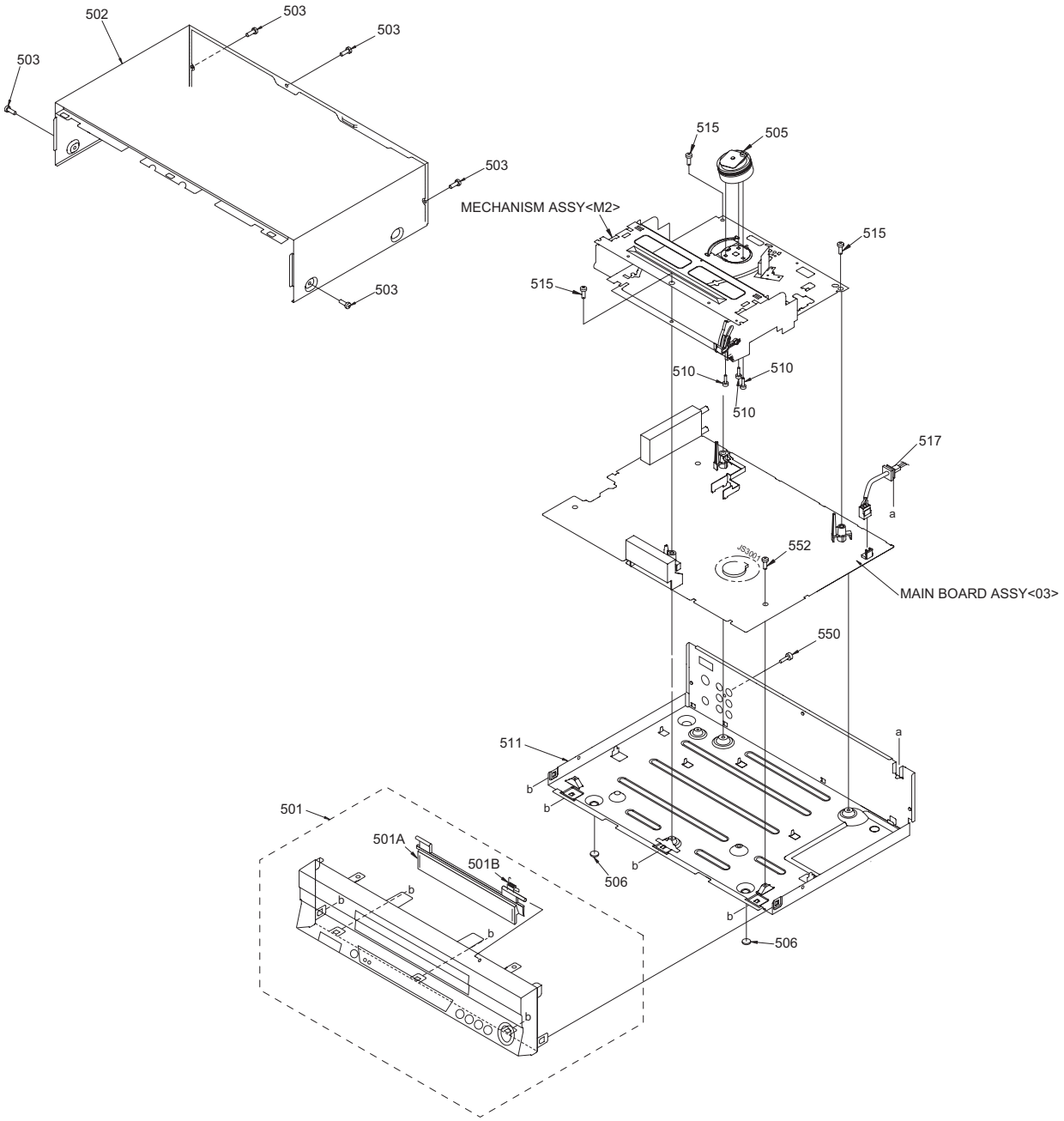
VHS mechanism assembly and parts list ---------- 3-4
Electrical parts list ---------- 3-7
Packing materials and accessories parts list ---------- 3-12

Exploded view of general assembly and parts list

Block No.M1MM



MODEL	MARK	MODEL	MARK
HR-J4020UA	A	HR-J7020UA	C
HR-J4020UB	B	HR-J7020UM	D

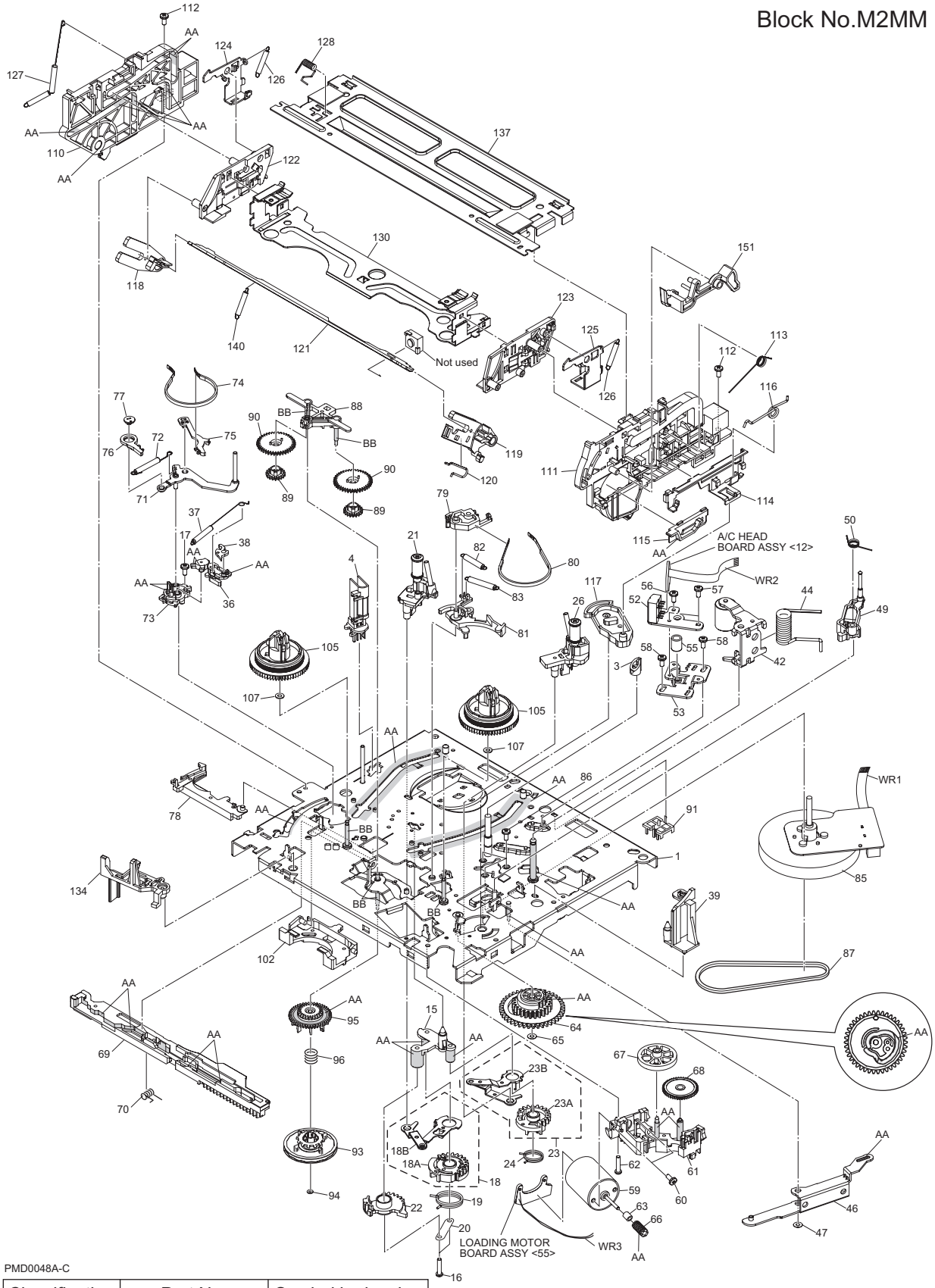
General assembly

Block No. [M][1][M][M]

⚠ Symbol No.	Part No.	Part Name	Description	Local
⚠501	LP10539-006D	FRONT PANEL ASSY		A
⚠501	LP10539-007D	FRONT PANEL ASSY		B
⚠501	LP10539-005D	FRONT PANEL ASSY		C
⚠501	LP10539-004D	FRONT PANEL ASSY		D
501A	LP21159-009A	CASSETTE DOOR		A,B
501A	LP21159-008A	CASSETTE DOOR		C,D
501B	PQ46448	TORSION SPRING		
⚠502	LP10536-002F	TOP COVER		
503	QYSBST3006NA	TAP SCREW	M3 x 6mm TOP COVER(x5)	
505	PDV2537A	DRUM FINAL ASSY		A
505	PDV2552B	DRUM FINAL ASSY		B
505	PDV2539A	DRUM FINAL ASSY		C
505	PDV2531A	DRUM FINAL ASSY		D
506	LP40995-001A	FOOT	(x2)	
510	QYSPSPD3008ZA	SCREW	M3 x 8mm DRUM(x3)	
⚠511	LP10535-007C	BOTTOM CHASSIS		A,B
⚠511	LP10535-006C	BOTTOM CHASSIS		C
⚠511	LP10535-001C	BOTTOM CHASSIS		D
515	LP31391-002A	SPECIAL SCREW	MECHANISM(x3)	
⚠517	QMPR630-170-JC	POWER CORD	1.7m BLACK	B
⚠517	QMPR670-170-JC	POWER CORD	1.7m BLACK	A,C
⚠517	QMPR700-170-K	POWER CORD	1.7m BLACK	D
550	QYSDSF3008ZA	TAP SCREW	M3 x 8mm REAR JACK	
552	LP31391-001A	SPECIAL SCREW	MAIN	

VHS mechanism assembly and parts list

Block No.M2MM



PMD0048A-C

Classification	Part No.	Symbol in drawing
Grease	KYODO-SH-JB	AA
Oil	COSMO-HV56	BB

NOTE: The section marked in **AA** and **BB** indicate lubrication and greasing areas.

MODEL	MARK	MODEL	MARK
HR-J4020UA	A	HR-J7020UA	C
HR-J4020UB	B	HR-J7020UM	D

VHS mechanism

Block No. [M][2][M][M]

⚠ Symbol No.	Part No.	Part Name	Description	Local
1	LP21039-003A	MAIN DECK ASSY		
3	LP40097-002E	GUIDE POLE CAP		
4	NAH0004-001	FULL ERASE HEAD		
15	LP30958-001B	LOADING GEAR BASE		
16	QYTPST2620ZA	TAP SCREW	M2.6 x 20mm(x2)	
17	QYTDST2606ZA	TAP SCREW	M2.6 x 6mm	
18	LP40798-002A	LOADING GEAR(SUPPLY) ASSY		
18A	LP21040-001A	LOADING GEAR(SUPPLY)		
18B	LP40799-002A	LOADING ARM(SUPPLY) ASSY		
19	LP40837-001A	TORSION SPRING(SUPPLY)		
20	LP40903-004A	FIXING PLATE		
21	LP40806-001D	POLE BASE ASSY(SUPPLY)		
22	LP30959-001B	LOADING GEAR		
23	LP40802-002A	LOADING GEAR(TAKE UP) ASSY		
23A	LP21041-001D	LOADING GEAR(TAKE UP)		
23B	LP40803-002A	LOADING ARM(TAKE UP) ASSY		
24	LP40838-001A	TORSION SPRING(TAKE UP)		
26	LP40808-001E	POLE BASE ASSY(TAKE UP)		
36	LP21055-001G	TAKE UP LEVER		
37	LP40943-001A	TENSION SPRING		
38	LP40859-001D	T-UP HEAD		
39	LP30961-001C	LID GUIDE		
42	LP40810-003A	PINCH ROLLER ARM ASSY		
44	LP40840-001E	TORSION SPRING		
46	LP30963-002A	PRESS LEVER		
47	PQM30017-24	SLIT WASHER		
49	LP40813-001D	GUIDE ARM ASSY		
50	LP40841-001A	TORSION SPRING		
52	NAH0005-001	AC HEAD		
53	LP30965-003A	HEAD BASE		
55	LP40842-001D	COMPRESSION SPRING		
56	QYTDST2006MA	TAP SCREW	M2 x 6mm	
57	LP41036-002A	A/C ADJ.SCREW	(x2)	
58	QYTDST2606ZA	TAP SCREW	M2.6 x 6mm(x2)	
59	QAR0289-001	LOADING MOTOR		
60	QYTPSP3003ZA	SCREW	M3 x 3mm(x2)	
61	LP21056-002J	MOTOR BRACKET		
62	QYTPST2620ZA	TAP SCREW	M2.6 x 20mm	
63	LP40814-001B	WORM BEARING		
64	LP21044-001E	CONTROL CAM		
65	PQM30017-24	SLIT WASHER		
66	LP40815-001A	WORM GEAR		
67	LP40816-001B	HELICAL GEAR		
68	LP40817-001A	CONNECT GEAR		
69	LP10400-001N	CONTROL PLATE		
70	LP40843-001A	TORSION SPRING		
71	LP40818-002A	TENSION ARM ASSY		
72	LP40844-001F	TENSION SPRING		
73	LP21045-001E	TENSION ARM BASE		
74	LP40821-001A	TENSION BAND ASSY		
75	LP30967-001B	BAND HOLDER-1		
76	LP30968-001C	BAND HOLDER-2		
77	LP40822-002B	ADJUST PIN		
78	LP31000-005E	TENSION ARM LEVER		
79	LP21046-001C	MAIN BRAKE(TAKE UP)		
80	LP40824-001A	BAND BRAKE ASSY		
81	LP30969-002B	BRAKE LEVER		
82	LP30003-033C	TENSION SPRING		
83	LP30003-035C	TENSION SPRING		
⚠ 85	QAR0322-001	CAPSTAN MOTOR		
86	QYTPSG2606ZA	TAP SCREW	M2.6 x 6mm(x3)	
87	LP30005-010A	BELT	CAPSTAN MOTOR	
88	LP30970-001A	IDLER ARM		
89	LP40828-004A	IDLER GEAR 1	(x2)	
90	LP40829-002A	IDLER GEAR 2	(x2)	
91	LP31014-002A	WIRE HOLDER		
93	LP40934-001B	CLUTCH UNIT		
94	PQM30017-47	SLIT WASHER		
95	LP30973-001A	DIRECT GEAR		
96	LP40939-001A	COMPRESSION SPRING		
102	LP30974-001C	CHANGE LEVER		
105	LP21049-001A	REEL DISK	(x2)	
107	LP30017-004A	SPACER	REEL DISK(x2)	
110	LP10401-001L	SIDE FRAME(L)		
111	LP10402-001M	SIDE FRAME(R)		
112	QYTDST2606ZA	TAP SCREW	M2.6 x 6mm(x2)	
113	LP40917-001D	TORSION SPRING		
114	LP30976-002B	SIDE PLATE		
115	LP30977-002E	LIMIT PLATE		

MODEL	MARK	MODEL	MARK
HR-J4020UA	A	HR-J7020UA	C
HR-J4020UB	B	HR-J7020UM	D

⚠ Symbol No.	Part No.	Part Name	Description	Local
116	LP40846-001C	LIMIT SPRING		
117	LP31100-002A	DRIVE LEVER		
118	LP30978-001B	DRIVE ARM(L)		
119	LP30979-001S	DRIVE ARM(R)		
120	LP40847-001B	TORSION SPRING		
121	LP30980-002A	CONNECT PLATE		
122	LP10403-001C	SIDE HOLDER(L)		
123	LP10404-001E	SIDE HOLDER(R)		
124	LP30983-002A	LOCK LEVER(L)		
125	LP30984-002A	LOCK LEVER(R)		
126	LP40924-001D	TENSION SPRING	(x2)	
127	LP40972-001A	EARTH SPRING(1)		
128	LP40857-001B	EARTH SPRING(2)		
130	LP30981-003B	CASSETTE HOLDER ASSY		
134	LP21051-002C	REC SAFETY LEVER		
137	LP21052-002A	TOP FRAME		
140	LP41153-001A	EARTH SPRING(3)		
151	LP30985-002M	DOOR OPENER		
WR1	WJT0117-001A	E-CARD WIRE	DRUM	
WR2	WJT0067-001B	E-CARD WIRE	A/C HEAD CN2001	
WR3	WJS0022-001A	E-FL/RB WIRE	LOADING MOTOR	

MODEL	MARK	MODEL	MARK
HR-J4020UA	A	HR-J7020UA	C
HR-J4020UB	B	HR-J7020UM	D

Electrical parts list

Main board

Block No. [0][3]

⚠ Symbol No.	Part No.	Part Name	Description	Local
PW1	LPA10234-13F	MAIN BOARD ASSY		A
PW1	LPA10234-14F	MAIN BOARD ASSY		B
PW1	LPA10234-12F	MAIN BOARD ASSY		C
PW1	LPA10234-11F	MAIN BOARD ASSY		D
IC1	JCP8060-LSA	IC		A,B,C
IC1	JCP8060-NVA	IC		D
⚠ IC2201	AN3663FBP	IC		C,D
IC3001	MN101D10GJD	IC(MCU)	MASK	
IC3003	LPN0921-003C-02	IC(EEPROM)	*(REFER TO BELOW)	A
IC3003	LPN0921-004C-03	IC(EEPROM)	*(REFER TO BELOW)	B
IC3003	LPN0921-002C-01	IC(EEPROM)	*(REFER TO BELOW)	C
IC3003	LPN0921-001D-00	IC(EEPROM)	*(REFER TO BELOW)	D
IC7002	GP1UM291QK	IR DETECT UNIT	38kHz	
Q2	2SC4081/QRS/-X	TRANSISTOR		A,C
Q2 or	2PC4081/R/-X	TRANSISTOR		A,C
Q4	2SA1576A/QR/-X	TRANSISTOR		A,B,C
Q4 or	2SB1218A/QR/-X	TRANSISTOR		A,B,C
Q4 or	2PA1576/R/-X	TRANSISTOR		A,B,C
Q7	2SC4081/QRS/-X	TRANSISTOR		A,C
Q7 or	2PC4081/R/-X	TRANSISTOR		A,C
Q7 or	2SD1819A/QRS/-X	TRANSISTOR		A,C
Q8	2SC4081/QRS/-X	TRANSISTOR		A,C
Q8 or	2PC4081/R/-X	TRANSISTOR		A,C
Q8 or	2SD1819A/QRS/-X	TRANSISTOR		A,C
Q9	2SC4081/QRS/-X	TRANSISTOR		A,C
Q9 or	2PC4081/R/-X	TRANSISTOR		A,C
Q9 or	2SD1819A/QRS/-X	TRANSISTOR		A,C
Q10	2SC4081/QRS/-X	TRANSISTOR		A,C
Q10 or	2PC4081/R/-X	TRANSISTOR		A,C
Q10 or	2SD1819A/QRS/-X	TRANSISTOR		A,C
Q18	DTC144WUA-X	DIGI TRANSISTOR		B
Q18 or	PDTC144WU-X	DIGI TRANSISTOR		B
Q18 or	UN521E-X	DIGI TRANSISTOR		B
Q18 or	RN1309-X	DIGI TRANSISTOR		B
Q202	2SC4081/QRS/-X	TRANSISTOR		B,D
Q202 or	2PC4081/R/-X	TRANSISTOR		B,D
Q2001	2SC4081/QRS/-X	TRANSISTOR		
Q2001 or	2SD1819A/QRS/-X	TRANSISTOR		
Q2001 or	2PC4081/R/-X	TRANSISTOR		
Q2002	2SC4081/QRS/-X	TRANSISTOR		
Q2002 or	2SD1819A/QRS/-X	TRANSISTOR		
Q2002 or	2PC4081/R/-X	TRANSISTOR		
Q2003	DTA144WUA-X	DIGI TRANSISTOR		
Q2003 or	UN511E-X	DIGI TRANSISTOR		
Q2003 or	RN2309-X	DIGI TRANSISTOR		
Q2003 or	PDTA144WU-X	DIGI TRANSISTOR		
Q2051	2SC4081/QRS/-X	TRANSISTOR		
Q2051 or	2SD1819A/QRS/-X	TRANSISTOR		
Q2051 or	2PC4081/R/-X	TRANSISTOR		
Q2052	2SA1576A/QR/-X	TRANSISTOR		
Q2052 or	2SB1218A/QR/-X	TRANSISTOR		
Q2052 or	2PA1576/R/-X	TRANSISTOR		
Q2053	DTC144WUA-X	DIGI TRANSISTOR		
Q2053 or	UN521E-X	DIGI TRANSISTOR		
Q2053 or	RN1309-X	DIGI TRANSISTOR		
Q2053 or	PDTC144WU-X	DIGI TRANSISTOR		
Q2054	2SA1576A/QR/-X	TRANSISTOR		
Q2054 or	2SB1218A/QR/-X	TRANSISTOR		
Q2054 or	2PA1576/R/-X	TRANSISTOR		
Q2055	DTC144WUA-X	DIGI TRANSISTOR		
Q2055 or	UN521E-X	DIGI TRANSISTOR		
Q2055 or	RN1309-X	DIGI TRANSISTOR		
Q2055 or	PDTC144WU-X	DIGI TRANSISTOR		
Q2201	DTA144WUA-X	DIGI TRANSISTOR		C,D
Q2201 or	PDTA144WU-X	DIGI TRANSISTOR		C,D
Q2201 or	UN511E-X	DIGI TRANSISTOR		C,D
Q2201 or	RN2309-X	DIGI TRANSISTOR		C,D
Q2202	DTC144WUA-X	DIGI TRANSISTOR		C,D
Q2202 or	PDTC144WU-X	DIGI TRANSISTOR		C,D
Q2202 or	UN521E-X	DIGI TRANSISTOR		C,D
Q2202 or	RN1309-X	DIGI TRANSISTOR		C,D
Q2203	2SC4081/QRS/-X	TRANSISTOR		C,D
Q2203 or	2PC4081/R/-X	TRANSISTOR		C,D
Q2203 or	2SD1819A/QRS/-X	TRANSISTOR		C,D
Q2204	2SC4081/QRS/-X	TRANSISTOR		C,D
Q2204 or	2PC4081/R/-X	TRANSISTOR		C,D
Q2204 or	2SD1819A/QRS/-X	TRANSISTOR		C,D
Q3002	PTZ-NV16A	IC(PHOTO SENSOR)		
Q3006	2SC4081/QRS/-X	TRANSISTOR		
Q3006 or	2PC4081/R/-X	TRANSISTOR		
Q3006 or	2SD1819A/QRS/-X	TRANSISTOR		
Q3007	2SC4081/QRS/-X	TRANSISTOR		
Q3007 or	2PC4081/R/-X	TRANSISTOR		
Q3007 or	2SD1819A/QRS/-X	TRANSISTOR		
Q4001	UN5211-X	DIGI TRANSISTOR		
Q4001 or	DTC114EUA-X	DIGI TRANSISTOR		
Q4001 or	RN1302-X	DIGI TRANSISTOR		
Q4001 or	PDTC114EU-X	DIGI TRANSISTOR		
Q4002	2SD1819A/QRS/-X	TRANSISTOR		
Q4002 or	2SC4081/QRS/-X	TRANSISTOR		
Q4002 or	2PC4081/R/-X	TRANSISTOR		
Q5101	2SK2632-CB14	POWER MOS FET		
Q5101 or	2SK2129-LT	POWER MOS FET		
Q5101 or	2SK2632	POWER MOS FET		
Q5101 or	2SK2129	POWER MOS FET		
Q5102	2SD2144S/UV/-T	TRANSISTOR		
Q5301	2SC1740S/RS/-T	TRANSISTOR		
Q5301 or	2SC3199/YG/-T	TRANSISTOR		
Q5304	2SD2144S/UV/-T	TRANSISTOR		
Q5305	DTA114EUA-X	DIGI TRANSISTOR		
Q5305 or	UN5111-X	DIGI TRANSISTOR		
Q5305 or	RN2302-X	DIGI TRANSISTOR		
Q5305 or	PDTA114EU-X	DIGI TRANSISTOR		
Q5306	DTC114EUA-X	DIGI TRANSISTOR		
Q5306 or	UN5211-X	DIGI TRANSISTOR		
Q5306 or	RN1302-X	DIGI TRANSISTOR		
Q5306 or	PDTC114EU-X	DIGI TRANSISTOR		
⚠ Q5321	2SD1858/QR/-T	TRANSISTOR		
Q6030	2SB1218A/RS/-X	TRANSISTOR		
Q6030 or	2SA1576A/QR/-X	TRANSISTOR		
Q6030 or	2PA1576/R/-X	TRANSISTOR		
Q7001	RT1P14HC-X	DIGI TRANSISTOR		C,D
Q7001 or	DTA114WKA-X	DIGI TRANSISTOR		C,D
Q7001 or	UN211F-X	DIGI TRANSISTOR		C,D
Q7002	RT1P14HC-X	DIGI TRANSISTOR		C,D
Q7002 or	DTA114WKA-X	DIGI TRANSISTOR		C,D
Q7002 or	UN211F-X	DIGI TRANSISTOR		C,D
Q7003	RT1P14HC-X	DIGI TRANSISTOR		C,D
Q7003 or	DTA114WKA-X	DIGI TRANSISTOR		C,D
Q7003 or	UN211F-X	DIGI TRANSISTOR		C,D
Q7004	RT1P14HC-X	DIGI TRANSISTOR		C,D
Q7004 or	DTA114WKA-X	DIGI TRANSISTOR		C,D
Q7004 or	UN211F-X	DIGI TRANSISTOR		C,D
Q7005	RT1P14HC-X	DIGI TRANSISTOR		C,D
Q7005 or	DTA114WKA-X	DIGI TRANSISTOR		C,D
Q7005 or	UN211F-X	DIGI TRANSISTOR		C,D
Q7006	RT1N430C-X	DIGI TRANSISTOR		C,D
Q7006 or	DTC143TKA-X	DIGI TRANSISTOR		C,D
Q7006 or	UN2216-X	DIGI TRANSISTOR		C,D
Q7007	RT1N430C-X	DIGI TRANSISTOR		C,D
Q7007 or	DTC143TKA-X	DIGI TRANSISTOR		C,D
Q7007 or	UN2216-X	DIGI TRANSISTOR		C,D
Q7008	RT1N430C-X	DIGI TRANSISTOR		
Q7008 or	DTC143TKA-X	DIGI TRANSISTOR		
Q7008 or	UN2216-X	DIGI TRANSISTOR		
Q7009	RT1N430C-X	DIGI TRANSISTOR		
Q7009 or	DTC143TKA-X	DIGI TRANSISTOR		
Q7009 or	UN2216-X	DIGI TRANSISTOR		
Q7010	RT1N430C-X	DIGI TRANSISTOR		
Q7010 or	DTC143TKA-X	DIGI TRANSISTOR		
Q7010 or	UN2216-X	DIGI TRANSISTOR		
Q7011	RT1N430C-X	DIGI TRANSISTOR		
Q7011 or	DTC143TKA-X	DIGI TRANSISTOR		
Q7011 or	UN2216-X	DIGI TRANSISTOR		
Q7012	RT1N430C-X	DIGI TRANSISTOR		C,D
Q7012 or	DTC143TKA-X	DIGI TRANSISTOR		C,D

*The VCR goes to jig RCU mode after replacing the EEPROM and the VCR does not accept some RCU command.
Therefore please set the VCR to the user RCU mode after replacing the EEPROM.
The method of setting the VCR to the user RCU mode is written on the service manual.

MODEL	MARK	MODEL	MARK
HR-J4020UA	A	HR-J7020UA	C
HR-J4020UB	B	HR-J7020UM	D

⚠ Symbol No.	Part No.	Part Name	Description	Local
Q7012	or UN2216-X	DIGI TRANSISTOR		C,D
Q7104	2SA1576A/QR/-X	TRANSISTOR		
Q7104	or 2SB1218A/QR/-X	TRANSISTOR		
Q7104	or 2PA1576/R/-X	TRANSISTOR		
D2001	1SS133-T2	DIODE		
D2001	or 1SS270A-T2	SI DIODE		
D2251	1SS133-T2	DIODE		C,D
D2251	or 1SS270A-T2	SI DIODE		C,D
D3001	LNB2301L01VI	LED		
D3002	1SS133-T2	DIODE		
D3002	or 1SS270A-T2	SI DIODE		
D3004	10EDB20-T2	SI DIODE		C,D
D3004	or 1A3G-T2	SI DIODE		C,D
⚠ D3005	10EDB20-T2	SI DIODE		
D3005	or 1A3G-T2	SI DIODE		
D3016	MTZJ3.9B-T2	Z DIODE		
D3016	or RD3.9ES/B2/-T2	Z DIODE		
D5001	S1WB/A/60-4102	BRIDGE DIODE		
D5001	or S1WB/A/60-X	BRIDGE DIODE		
D5101	AU01-T2	SI DIODE		
D5101	or 10ERB40-T2	FR DIODE		
D5103	1SS133-T2	DIODE		
D5103	or 1SS270A-T2	SI DIODE		
D5105	1SS133-T2	DIODE		
D5105	or 1SS270A-T2	SI DIODE		
D5203	AU01Z-T2	FR DIODE		
D5203	or 10ERB20-T2	FR DIODE		
D5203	or 1F4G-T2	FR DIODE		
D5204	AU01Z-T2	FR DIODE		
D5204	or 10ERB20-T2	FR DIODE		
D5204	or 1F4G-T2	FR DIODE		
D5206	AK04-T2	SB DIODE		
D5206	or 11EQS04-T2	SB DIODE		
D5206	or 1S4-T2	SB DIODE		
D5206	or SBO40-T2	SB DIODE		
⚠ D5207	AK04-T2	SB DIODE		
⚠ D5207	or 11EQS04-T2	SB DIODE		
⚠ D5207	or 1S4-T2	SB DIODE		
⚠ D5207	or SBO40-T2	SB DIODE		
D5210	PG104RS-T2	FR DIODE		
D5210	or AU01Z-T2	FR DIODE		
D5210	or 1SR153-400-T2	FR DIODE		
D5210	or 10ERB20-T2	FR DIODE		
D5210	or 1F4G-T2	FR DIODE		
D5301	MTZJ15C-T2	Z DIODE		
D5301	or RD15ES/B3/-T2	Z DIODE		
D5302	MTZJ12A-T2	Z DIODE		
D5302	or RD12ES/B1/-T2	Z DIODE		
D5303	MTZJ5.6A-T2	Z DIODE		
D5303	or RD5.6ES/B1/-T2	Z DIODE		
D5305	MTZJ5.6C-T2	Z DIODE		
D5305	or RD5.6ES/B3/-T2	Z DIODE		
D6002	HZ30-2L-T2	Z DIODE		
D6002	or HZ30-2LTD	Z DIODE		
D7004	SLR-342MG-T16	LED	GREEN	A,B
D7005	SLR-342VR-T16	LED	RED	A,B
D7006	SLR-342VR-T16	LED	RED	A,B
D7007	SLR-342MG-T16	LED	GREEN	A,B
PC3001	RPI-304J	IC(PHOTO SENSOR)		
PC3002	RPI-304J	IC(PHOTO SENSOR)		
⚠ PC5101	PC123Y22FZ	PHOTO COUPLER		
C1	NDC31HJ-151X	C CAPACITOR	150pF 50V J	
C2	NDC31HJ-470X	C CAPACITOR	47pF 50V J	A,C
C2	NDC31HJ-330X	C CAPACITOR	33pF 50V J	B,D
C4	QEKJ1EM-106Z	E CAPACITOR	10uF 25V M	
C5	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
C6	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
C7	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
C8	QEKJ1HM-105Z	E CAPACITOR	1uF 50V M	
C9	QEKJ1HM-225Z	E CAPACITOR	2.2uF 50V M	
C10	QEKJ0JM-476Z	E CAPACITOR	47uF 6.3V M	
C11	QEPF1HM-105Z	E CAPACITOR	1uF 50V M	
C13	QEKJ1HM-105Z	E CAPACITOR	1uF 50V M	
C14	QEKJ1HM-105Z	E CAPACITOR	1uF 50V M	A,B,C
C15	NCB31EK-104X	C CAPACITOR	0.1uF 25V K	

⚠ Symbol No.	Part No.	Part Name	Description	Local
C17	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
C19	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
C20	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
C22	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
C24	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
C25	QEKJ1HM-335Z	E CAPACITOR	3.3uF 50V M	
C26	QEKJ1EM-106Z	E CAPACITOR	10uF 25V M	
C27	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	
C30	NDC31HJ-561X	C CAPACITOR	560pF 50V J	A,B,C
C30	NDC31HJ-331X	C CAPACITOR	330pF 50V J	D
C31	QEKJ0JM-476Z	E CAPACITOR	47uF 6.3V M	
C32	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
C33	QEKJ1EM-106Z	E CAPACITOR	10uF 25V M	
C34	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	
C35	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	
C36	QEKJ1HM-105Z	E CAPACITOR	1uF 50V M	
C37	NDC31HJ-4R0X	C CAPACITOR	4pF 50V J	A,C,D
C37	NDC31HJ-3R0X	C CAPACITOR	3pF 50V J	B
C38	QCBB1HK-103	C CAPACITOR	0.01uF 50V K	B
C38	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	A,C,D
C39	QEKJ0JM-476Z	E CAPACITOR	47uF 6.3V M	
C40	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	
C41	NCB31AK-224X	C CAPACITOR	0.22uF 10V K	A,C
C41	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	B,D
C43	QEKJ1HM-335Z	E CAPACITOR	3.3uF 50V M	
C44	QEKJ1HM-225Z	E CAPACITOR	2.2uF 50V M	
C45	NCB31CK-683X	C CAPACITOR	0.068uF 16V K	B
C45	NCB31CK-333X	C CAPACITOR	0.033uF 16V K	A,C
C45	NCB31EK-472X	C CAPACITOR	4700pF 25V K	D
C46	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	A,B
C46	NCB31CK-333X	C CAPACITOR	0.033uF 16V K	C,D
C47	QEKJ1HM-474Z	E CAPACITOR	0.47uF 50V M	
C48	NCB31EK-223X	C CAPACITOR	0.022uF 25V K	
C49	QEKJ1HM-475Z	E CAPACITOR	4.7uF 50V M	
C55	NDC31HJ-151X	C CAPACITOR	150pF 50V J	A,B
C56	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
C57	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	A,C
C57	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	B,D
C58	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	A,C
C58	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	B,D
C59	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	A,C
C59	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	B,D
C60	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	A,C
C60	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	B,D
C61	QEKC0JM-476Z	E CAPACITOR	47uF 6.3V M	
C62	QCBB1HK-103Y	C CAPACITOR	0.01uF 50V K	
C63	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	A,C
C64	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	A,C
C76	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	A,C
C76	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	B,D
C77	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	A,C
C77	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	B,D
C78	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	
C201	QERF0JM-476Z	E CAPACITOR	47uF 6.3V M	
C202	NCB31EK-223X	C CAPACITOR	0.022uF 25V K	
C203	QEKJ1HM-105Z	E CAPACITOR	1uF 50V M	
C205	NDC31HJ-101X	C CAPACITOR	100pF 50V J	
C207	NCF31AZ-105X	C CAPACITOR	1uF 10V Z	
C209	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	A,B,C
C211	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	A,B,C
C215	NCB31HK-222X	C CAPACITOR	2200pF 50V K	A,B,C
C215	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	D
C216	NDC31HJ-101X	C CAPACITOR	100pF 50V J	A,B,C
C216	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	D
C2001	QEKJ1HM-475Z	E CAPACITOR	4.7uF 50V M	
C2002	QEKJ1HM-105Z	E CAPACITOR	1uF 50V M	
C2003	QEKJ0JM-476Z	E CAPACITOR	47uF 6.3V M	
C2005	QEKJ1HM-475Z	E CAPACITOR	4.7uF 50V M	
C2006	NCB31EK-682X	C CAPACITOR	6800pF 25V K	
C2007	QEKJ1CM-226Z	E CAPACITOR	22uF 16V M	
C2008	QEKJ1HM-475Z	E CAPACITOR	4.7uF 50V M	
C2009	NCB31HK-102X	C CAPACITOR	1000pF 50V K	
C2010	NCB31HK-681X	C CAPACITOR	680pF 50V K	
C2011	QEKJ1HM-475Z	E CAPACITOR	4.7uF 50V M	
C2012	QEKC1HM-475Z	E CAPACITOR	4.7uF 50V M	
C2051	NDC31HJ-331X	C CAPACITOR	330pF 50V J	
C2052	QFLC1HJ-823Z	M CAPACITOR	0.082uF 50V J	
C2053	NCB31EK-472X	C CAPACITOR	4700pF 25V K	

MODEL	MARK	MODEL	MARK
HR-J4020UA	A	HR-J7020UA	C
HR-J4020UB	B	HR-J7020UM	D

⚠ Symbol No.	Part No.	Part Name	Description	Local
C2054	NCB31EK-223X	C CAPACITOR	0.022uF 25V K	
C2055	QEKJ1EM-106Z	E CAPACITOR	10uF 25V M	
C2201	QEKJ1EM-106Z	E CAPACITOR	10uF 25V M	C,D
C2202	QEKJ1HM-475Z	E CAPACITOR	4.7uF 50V M	C,D
C2203	QEKJ1HM-475Z	E CAPACITOR	4.7uF 50V M	C,D
C2204	QEKJ0JM-336Z	E CAPACITOR	33uF 6.3V M	C,D
C2205	QEKJ1EM-106Z	E CAPACITOR	10uF 25V M	C,D
C2206	QEKJ1EM-106Z	E CAPACITOR	10uF 25V M	C,D
C2207	NCB31EK-153X	C CAPACITOR	0.015uF 25V K	C,D
C2208	NCB31EK-153X	C CAPACITOR	0.015uF 25V K	C,D
C2209	QERF1CM-106Z	E CAPACITOR	10uF 16V M	C,D
C2210	QERF1CM-106Z	E CAPACITOR	10uF 16V M	C,D
C2211	QEKJ0JM-336Z	E CAPACITOR	33uF 6.3V M	C,D
C2212	QEKJ0JM-476Z	E CAPACITOR	47uF 6.3V M	C,D
C2214	QEKJ1EM-106Z	E CAPACITOR	10uF 25V M	C,D
C2215	QEKJ1EM-106Z	E CAPACITOR	10uF 25V M	C,D
C2216	QEKJ1CM-476Z	E CAPACITOR	47uF 16V M	C,D
C2218	QEKJ1EM-106Z	E CAPACITOR	10uF 25V M	C,D
C2219	QEKJ1CM-226Z	E CAPACITOR	22uF 16V M	C,D
C2220	QEKJ1EM-106Z	E CAPACITOR	10uF 25V M	C,D
C2221	NCB31EK-223X	C CAPACITOR	0.022uF 25V K	C,D
C2222	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	C,D
C2227	QEKJ1HM-475Z	E CAPACITOR	4.7uF 50V M	C,D
C2251	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	C,D
C2252	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	C,D
C2253	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	C,D
C2254	QEKJ0JM-476Z	E CAPACITOR	47uF 6.3V M	C,D
C2255	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	C,D
C2256	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	C,D
C2257	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	C,D
C2259	QEKJ1HM-334Z	E CAPACITOR	0.33uF 50V M	C,D
C2261	NDC31HJ-470X	C CAPACITOR	47pF 50V J	C
C2262	NDC31HJ-470X	C CAPACITOR	47pF 50V J	C
C3008	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	
C3011	QEKJ1HM-475Z	E CAPACITOR	4.7uF 50V M	
C3016	NDC31HJ-180X	C CAPACITOR	18pF 50V J	
C3017	NDC31HJ-270X	C CAPACITOR	27pF 50V J	
C3021	QEKJ1CM-107Z	E CAPACITOR	100uF 16V M	
C3029	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	
C3035	NCF31CZ-104X	C CAPACITOR	0.1uF 16V Z	
C3036	QERF0JM-107Z	E CAPACITOR	100uF 6.3V M	
C3049	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	
C3052	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	
C3056	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
C3071	QETJ1HM-336Z	E CAPACITOR	33uF 50V M	
C4001	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
C4002	QERF1HM-105Z	E CAPACITOR	1uF 50V M	
C4004	QERF1AM-336Z	E CAPACITOR	33uF 10V M	
C4006	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
C4007	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	
C4009	NCB31HK-102X	C CAPACITOR	1000pF 50V K	
C4010	QEKF0JM-476Z	E CAPACITOR	47uF 6.3V M	
C4011	NCF31CZ-224X	C CAPACITOR	0.22uF 16V Z	
C4014	NDC31HJ-101X	C CAPACITOR	100pF 50V J	
C4019	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	
⚠ C5001	QFZ9072-473	MM CAPACITOR	0.047uF AC250V K	
⚠ C5003	QCZ9071-101	C CAPACITOR	100pF AC400V K	
⚠ C5004	QCZ9079-222	C CAPACITOR	2200pF AC250V M	
C5006	QEZ0375-686	E CAPACITOR	68uF 400V M	
C5101	QCZ0212-472	C CAPACITOR	4700pF 1kV K	
C5102	QCZ0339-101Z	C CAPACITOR	100pF 1kV K	
C5104	QEKJ1HM-105Z	E CAPACITOR	1uF 50V M	
C5105	NCB31EK-183X	C CAPACITOR	0.018uF 25V K	
C5106	NDC31HJ-271X	C CAPACITOR	270pF 50V J	
C5107	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
C5202	QETN1CM-108Z	E CAPACITOR	1000uF 16V M	
C5203	QETN1AM-108Z	E CAPACITOR	1000uF 10V M	
C5204	QETJ2AM-475Z	E CAPACITOR	4.7uF 100V M	
C5207	QEKJ1CM-476Z	E CAPACITOR	47uF 16V M	
C5301	QEKJ1CM-476Z	E CAPACITOR	47uF 16V M	
C5303	QEKJ1CM-476Z	E CAPACITOR	47uF 16V M	
C5305	NCB31CK-224X	C CAPACITOR	0.22uF 16V K	
C6014	NCB31EK-104X	C CAPACITOR	0.1uF 25V K	A,B
C6014	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	C,D
C6021	NDC31HJ-151X	C CAPACITOR	150pF 50V J	C,D
C6032	NCB31EK-123X	C CAPACITOR	0.012uF 25V K	A,B
C6037	QEKJ1EM-106Z	E CAPACITOR	10uF 25V M	A,B
C6052	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	A,B
C6055	NDC31HJ-680X	C CAPACITOR	68pF 50V J	A,B
C6056	NDC31HJ-470X	C CAPACITOR	47pF 50V J	
C6501	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	C,D
C6502	QEKC1EM-106Z	E CAPACITOR	10uF 25V M	C,D
C6503	QEKJ1HM-105Z	E CAPACITOR	1uF 50V M	C,D
C6504	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	C,D
C6505	QEKJ1HM-335Z	E CAPACITOR	3.3uF 50V M	C,D
C6508	NCB31EK-223X	C CAPACITOR	0.022uF 25V K	C,D
C6509	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	C,D
C6511	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	C,D
C6512	NCB31EK-223X	C CAPACITOR	0.022uF 25V K	C,D
C6513	QEKJ1HM-225Z	E CAPACITOR	2.2uF 50V M	C,D
C6514	NCB31EK-223X	C CAPACITOR	0.022uF 25V K	C,D
C6515	QEKC1HM-335Z	E CAPACITOR	3.3uF 50V M	C,D
C6517	NCB31AK-224X	C CAPACITOR	0.22uF 10V K	C,D
C6531	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	C,D
C7011	QEKJ0JM-476Z	E CAPACITOR	47uF 6.3V M	
C7108	QETJ1CM-107Z	E CAPACITOR	100uF 16V M	
C7114	QETN0JM-477Z	E CAPACITOR	470uF 6.3V M	
R1	NRSA63J-622X	MG RESISTOR	6.2kΩ 1/16W J	
R2	NRSA63J-152X	MG RESISTOR	1.5kΩ 1/16W J	
R3	NRSA63J-822X	MG RESISTOR	8.2kΩ 1/16W J	
R6	QRE141J-101	C RESISTOR	100Ω 1/4W J	B,D
R6	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J	A,C
R7	QRE141J-471	C RESISTOR	470Ω 1/4W J	B,D
R7	NRSA63J-471X	MG RESISTOR	470Ω 1/16W J	A,C
R11	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	
R12	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
R15	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	A,B,C
R16	NRSA63J-822X	MG RESISTOR	8.2kΩ 1/16W J	A,B,C
R17	NRSA63J-681X	MG RESISTOR	680Ω 1/16W J	A,B,C
R21	NRSA63J-222X	MG RESISTOR	2.2kΩ 1/16W J	A,C
R22	NRSA63J-222X	MG RESISTOR	2.2kΩ 1/16W J	A,C
R36	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	
R37	NRSA63J-153X	MG RESISTOR	15kΩ 1/16W J	
R38	NRSA63J-685X	MG RESISTOR	6.8MΩ 1/16W J	A,B,C
R38	NRSA63J-565X	MG RESISTOR	5.6MΩ 1/16W J	D
R201	NRSA63J-332X	MG RESISTOR	3.3kΩ 1/16W J	
R202	NRSA63J-222X	MG RESISTOR	2.2kΩ 1/16W J	
R203	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J	A,B,C
R204	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J	A,B,C
R2001	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J	A,B
R2003	NRSA63J-681X	MG RESISTOR	680Ω 1/16W J	A,B
R2003	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J	C,D
R2004	NRSA63J-272X	MG RESISTOR	2.7kΩ 1/16W J	A,B
R2005	NRSA63J-333X	MG RESISTOR	33kΩ 1/16W J	A,B
R2006	NRSA63J-473X	MG RESISTOR	47kΩ 1/16W J	A,B
R2007	NRSA63J-123X	MG RESISTOR	12kΩ 1/16W J	C,D
R2008	NRSA63J-473X	MG RESISTOR	47kΩ 1/16W J	A,B
R2009	NRSA63J-682X	MG RESISTOR	6.8kΩ 1/16W J	A,B
R2010	NRSA63J-123X	MG RESISTOR	12kΩ 1/16W J	C,D
R2011	NRSA63J-473X	MG RESISTOR	47kΩ 1/16W J	A,B
R2012	NRSA63J-682X	MG RESISTOR	6.8kΩ 1/16W J	A,B
R2013	NRSA63J-123X	MG RESISTOR	12kΩ 1/16W J	
R2014	NRSA63J-394X	MG RESISTOR	390kΩ 1/16W J	
R2015	NRSA63J-271X	MG RESISTOR	270Ω 1/16W J	
R2016	NRSA63J-333X	MG RESISTOR	33kΩ 1/16W J	
R2017	NRSA63J-223X	MG RESISTOR	22kΩ 1/16W J	
R2018	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	
R2019	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	
R2021	NRSA63J-333X	MG RESISTOR	33kΩ 1/16W J	
R2022	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R2023	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R2024	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	C,D
R2053	QRE141J-123Y	C RESISTOR	12kΩ 1/4W J	
R2054	NRSA63J-123X	MG RESISTOR	12kΩ 1/16W J	
R2055	NRSA63J-3R3X	MG RESISTOR	3.3Ω 1/16W J	
R2056	QRE141J-820Y	C RESISTOR	82Ω 1/4W J	
R2057	NRSA63J-473X	MG RESISTOR	47kΩ 1/16W J	
R2058	NRSA63J-183X	MG RESISTOR	18kΩ 1/16W J	
R2059	NRSA63J-473X	MG RESISTOR	47kΩ 1/16W J	
R2060	NRSA63J-183X	MG RESISTOR	18kΩ 1/16W J	
R2201	NRSA63J-473X	MG RESISTOR	47kΩ 1/16W J	C
R2202	NRSA63J-682X	MG RESISTOR	6.8kΩ 1/16W J	C
R2203	NRSA63J-473X	MG RESISTOR	47kΩ 1/16W J	C,D
R2204	NRSA63J-682X	MG RESISTOR	6.8kΩ 1/16W J	C,D
R2205	NRSA63J-473X	MG RESISTOR	47kΩ 1/16W J	C

MODEL	MARK	MODEL	MARK
HR-J4020UA	A	HR-J7020UA	C
HR-J4020UB	B	HR-J7020UM	D

⚠ Symbol No.	Part No.	Part Name	Description	Local
R2206	NRSA63J-682X	MG RESISTOR	6.8kΩ 1/16W J	C
R2207	NRSA63J-473X	MG RESISTOR	47kΩ 1/16W J	C,D
R2208	NRSA63J-682X	MG RESISTOR	6.8kΩ 1/16W J	C,D
R2209	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J	C,D
R2210	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	C,D
R2211	NRSA63J-332X	MG RESISTOR	3.3kΩ 1/16W J	C,D
R2212	NRSA63J-332X	MG RESISTOR	3.3kΩ 1/16W J	C,D
R2213	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	C,D
R2214	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J	C,D
R2215	QRE141J-221Y	C RESISTOR	220Ω 1/4W J	C,D
R2216	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	C,D
R2217	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	C,D
R2218	NRSA63J-392X	MG RESISTOR	3.9kΩ 1/16W J	C,D
R2219	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	C,D
R2220	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	C,D
R2222	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	C,D
R2225	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	C,D
R2234	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	C,D
R2251	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	C,D
R2252	NRSA63J-332X	MG RESISTOR	3.3kΩ 1/16W J	C,D
R2253	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J	C,D
R2255	NRSA63J-273X	MG RESISTOR	27kΩ 1/16W J	C,D
R2257	NRSA63J-684X	MG RESISTOR	680kΩ 1/16W J	C,D
R3014	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	B
R3017	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
R3018	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
R3021	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
R3025	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
R3030	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
R3035	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	
R3063	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
R3064	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
R3091	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	
R3092	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	
R3093	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	
R3094	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	
R3114	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
R3205	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R3206	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R3207	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R3208	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R3209	NRSA63J-181X	MG RESISTOR	180Ω 1/16W J	
R3211	NRSA63J-183X	MG RESISTOR	18kΩ 1/16W J	
R3212	NRSA63J-121X	MG RESISTOR	120Ω 1/16W J	
R3213	NRSA63J-183X	MG RESISTOR	18kΩ 1/16W J	
R3214	NRSA63J-121X	MG RESISTOR	120Ω 1/16W J	
R3215	NRSA63J-183X	MG RESISTOR	18kΩ 1/16W J	
R3216	NRSA63J-474X	MG RESISTOR	470kΩ 1/16W J	
R3217	NRSA63J-334X	MG RESISTOR	330kΩ 1/16W J	
R3219	QRE141J-103Y	C RESISTOR	10kΩ 1/4W J	
R3220	NRSA63J-562X	MG RESISTOR	5.6kΩ 1/16W J	
R3222	NRSA63J-471X	MG RESISTOR	470Ω 1/16W J	
R3223	NRSA63J-105X	MG RESISTOR	1MΩ 1/16W J	
R3224	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J	
R3226	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R3227	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R3237	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	
R3238	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	
R3242	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R3243	NRSA63J-681X	MG RESISTOR	680Ω 1/16W J	
R3244	NRSA63J-331X	MG RESISTOR	330Ω 1/16W J	
R3245	NRSA63J-682X	MG RESISTOR	6.8kΩ 1/16W J	
R3253	QRE141J-103Y	C RESISTOR	10kΩ 1/4W J	
R4001	NRSA63J-222X	MG RESISTOR	2.2kΩ 1/16W J	
R4002	NRSA63J-562X	MG RESISTOR	5.6kΩ 1/16W J	
R4003	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
R4010	NRSA63J-471X	MG RESISTOR	470Ω 1/16W J	
R4011	NRSA63J-471X	MG RESISTOR	470Ω 1/16W J	
R4012	NRSA63J-153X	MG RESISTOR	15kΩ 1/16W J	
R4018	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
R4019	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
R5101	QRE141J-224Y	C RESISTOR	220kΩ 1/4W J	
R5102	QRE141J-224Y	C RESISTOR	220kΩ 1/4W J	
R5103	QRE141J-683Y	C RESISTOR	68kΩ 1/4W J	
R5104	QRG02GJ-683	OMF RESISTOR	68kΩ 2W J	
R5106	QRT01DJ-R39X	MF RESISTOR	0.39Ω 1W J	
R5107	QRE121J-331Y	C RESISTOR	330Ω 1/2W J	
R5108	NRSA63J-152X	MG RESISTOR	1.5kΩ 1/16W J	
R5109	NRSA63J-681X	MG RESISTOR	680Ω 1/16W J	
R5110	NRSA63J-224X	MG RESISTOR	220kΩ 1/16W J	
R5111	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
R5112	NRSA63J-221X	MG RESISTOR	220Ω 1/16W J	
R5302	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
R5303	NRSA63J-122X	MG RESISTOR	1.2kΩ 1/16W J	
R5304	NRSA63J-471X	MG RESISTOR	470Ω 1/16W J	
R5306	NRSA63J-181X	MG RESISTOR	180Ω 1/16W J	
R5310	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R5312	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
R5313	NRSA63J-821X	MG RESISTOR	820Ω 1/16W J	
R5332	QRE121J-391Y	C RESISTOR	390Ω 1/2W J	
R6020	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
R6021	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
R6030	NRSA63J-332X	MG RESISTOR	3.3kΩ 1/16W J	
R6031	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
R6032	NRSA63J-153X	MG RESISTOR	15kΩ 1/16W J	A,B
R6033	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	A,B
R6050	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
R6054	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
R6056	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
R6502	NRSA63J-332X	MG RESISTOR	3.3kΩ 1/16W J	C,D
R7001	NRSA63J-331X	MG RESISTOR	330Ω 1/16W J	C,D
R7002	NRSA63J-331X	MG RESISTOR	330Ω 1/16W J	C,D
R7003	NRSA63J-331X	MG RESISTOR	330Ω 1/16W J	
R7004	NRSA63J-331X	MG RESISTOR	330Ω 1/16W J	
R7005	NRSA63J-331X	MG RESISTOR	330Ω 1/16W J	
R7006	NRSA63J-331X	MG RESISTOR	330Ω 1/16W J	
R7007	NRSA63J-331X	MG RESISTOR	330Ω 1/16W J	C,D
R7015	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
R7020	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R7021	NRSA63J-122X	MG RESISTOR	1.2kΩ 1/16W J	
R7022	NRSA63J-182X	MG RESISTOR	1.8kΩ 1/16W J	
R7023	NRSA63J-222X	MG RESISTOR	2.2kΩ 1/16W J	
R7030	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R7031	NRSA63J-122X	MG RESISTOR	1.2kΩ 1/16W J	A,B
R7032	NRSA63J-182X	MG RESISTOR	1.8kΩ 1/16W J	
R7033	NRSA63J-222X	MG RESISTOR	2.2kΩ 1/16W J	
R7034	NRSA63J-272X	MG RESISTOR	2.7kΩ 1/16W J	
R7040	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	C,D
R7071	NRSA63J-122X	MG RESISTOR	1.2kΩ 1/16W J	C,D
R7108	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J	
R7109	QRE123J-331X	C RESISTOR	330Ω 1/2W J	
R7118	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
R7121	NRSA63J-750X	MG RESISTOR	75Ω 1/16W J	
R7122	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
R7123	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	C,D
R7151	NRSA63J-750X	MG RESISTOR	75Ω 1/16W J	A,B,C
R7152	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	A,B,C
R7153	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	C
R7160	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
R7161	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	C,D
R7162	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	C,D
R7163	NRSA63J-750X	MG RESISTOR	75Ω 1/16W J	
L3	QQL29BJ-100Z	P COIL	0.40Ω 10uH J	
L5	QQL29BJ-100Z	P COIL	0.40Ω 10uH J	
L6	QQL29BJ-100Z	P COIL	0.40Ω 10uH J	
L7	QQR0967-001	CHOKE COIL		B
L10	QQL29BJ-100Z	P COIL	0.40Ω 10uH J	
L15	QQL01BJ-120Z	P COIL	0.90Ω 12uH J	A,C,D
L203	QQL231J-1R0Y	COIL	0.80Ω 1uH J	
L2251	QQL29BJ-100Z	P COIL	0.40Ω 10uH J	C,D
L4001	QQL231J-1R0Y	COIL	0.80Ω 1uH J	
L5201	PELN1184	CHOKE COIL		
L5202	PELN1184	CHOKE COIL		
L7103	QQL29BJ-100Z	P COIL	0.40Ω 10uH J	
T2051	QQR0002-001	BIAS COIL		
⚠T5001	QQS0265-001	SW TRANSF		
B1	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	B
B4	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	D
B7	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
B2001	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	A,B
B2004	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	A,B
B2202	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	C,D
B3011	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
B5301	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	

MODEL	MARK	MODEL	MARK
HR-J4020UA	A	HR-J7020UA	C
HR-J4020UB	B	HR-J7020UM	D

⚠ Symbol No.	Part No.	Part Name	Description	Local
B6001	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	C,D
B6002	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	C,D
B6003	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	C,D
B6520	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	C,D
B7001	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	C,D
B7002	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	A,B
B7105	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
CN1	QGF1207C1-06	CONNECTOR	FFC/FPC (1-6)	A,B
CN1	QGF1201C2-09	CONNECTOR	FFC/FPC (1-9)	C,D
CN2001	QGF1207C1-06	CONNECTOR	FFC/FPC (1-6)	
CN2002	QGB2532J1-02	CONNECTOR	B-B (1-2)	
CN3001	QGB2032M4-12	CONNECTOR	B-B (1-12)	
⚠ CN5001	QGA7901C3-02	CONNECTOR	W-B (1-2)	
CN7004	QGB2530J1-05	CONNECTOR	B-B (1-5)	A,B
CN7005	QGB2530K1-05	CONNECTOR	B-B (1-5)	A,B
⚠ CP3001	QMFZ050-1R5X-E	FUSE	1.5A 125V	
⚠ CP4001	QMFZ050-1R5X-E	FUSE	1.5A 125V	
DI7001	LTG-Y2K16M-02J	LED		C
DI7001	LTG-Y2K12M-01J	LED		D
⚠ F5001	QMF51E2-2R0	FUSE	2A AC250V	
FC5001	QNG0006-001Z	FUSE CLIP		
FC5002	QNG0006-001Z	FUSE CLIP		
HD1	LP31260-001A	LED HOLDER		A,B
HS1	LP40090-001A	HEAT SINK		
J7103	QNN0633-001	PIN JACK	REAR AV IN/OUT	A,B
J7103	QNN0526-001	PIN JACK	REAR AV IN/OUT	C
J7103	QNN0586-001	PIN JACK	REAR AV IN/OUT	D
J7105	QNN0634-002	PIN JACK	FRONT AV IN	A,B
J7105	QNN0381-001	PIN JACK	FRONT AV IN	C,D
JS3001	QSW0954-003	ROTARY ENCODER		
K5101	QQR0678-001Z	FERRITE BEADS		
K5102	AU01-T2	SI DIODE		
⚠ LF5002	QQR0532-001	LINE FILTER		
OT1	LP31158-001A	BOSS(MECHA) 1		
OT2	LP31185-002A	BOSS(MECHA) 2	(x2)	
OT3	QYSDST3006ZA	TAP SCREW	M3 x 6mm Q5101	
S3001	QSW0602-004	PUSH SWITCH	REC.SAFETY	
S7002	QSW1062-001Z	TACT SWITCH	POWER	
S7003	QSW1062-001Z	TACT SWITCH	CH-	
S7006	QSW1062-001Z	TACT SWITCH	REW	
S7008	QSW1062-001Z	TACT SWITCH	FF	
S7010	QSW1062-001Z	TACT SWITCH	REC	
S7011	QSW1062-001Z	TACT SWITCH	STOP/EJECT	
S7013	QSW1062-001Z	TACT SWITCH	PLAY	
S7017	QSW1062-001Z	TACT SWITCH	CH+	
SD1	LP21142-002A	SHIELDCASE(PRE)		
TU6001	QAU0255-002	TUNER		A,B
TU6001	QAU0336-002	TUNER		C,D
W3	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	C,D
W4	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
W5	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
W9	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
W12	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	C,D
W15	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	C,D
W18	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	C,D
W19	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	C,D
W24	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
W25	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
W28	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
W36	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
W45	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	C,D
W48	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
W50	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
W52	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	D
X1	QAX0809-001	CRYSTAL	3.575611MHz	B
X1	QAX0808-001	CRYSTAL	3.582056MHz	A,C
X2	QAX0739-001	CRYSTAL	3.57MHz	
X3001	QAX0728-001	CRYSTAL	14.318180MHz	

A/C head board

Block No. [1][2]

⚠ Symbol No.	Part No.	Part Name	Description	Local
PW1	LPA10158-01A1	A/C HEAD BOARD ASSY		

Loading motor board

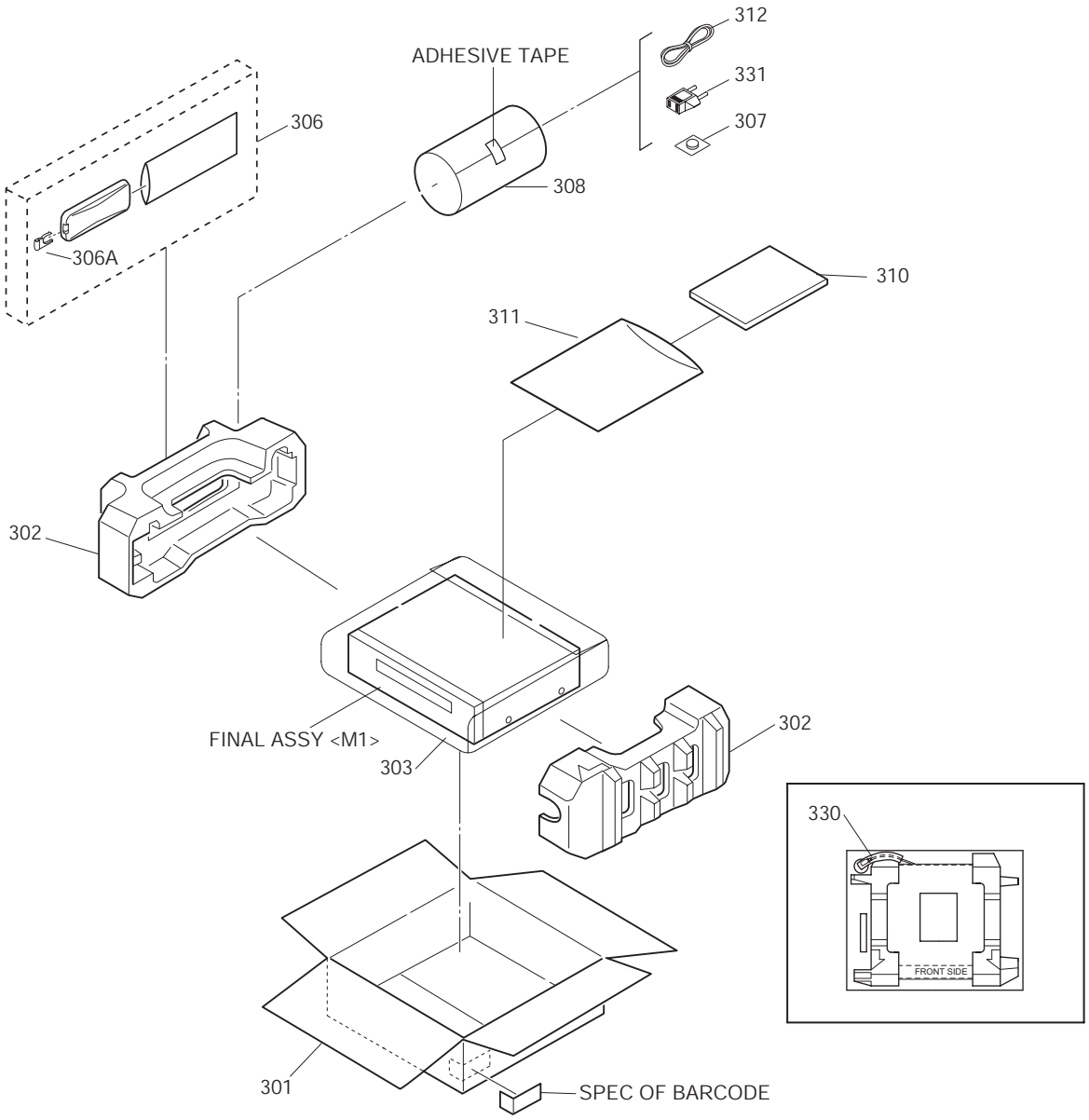
Block No. [5][5]

⚠ Symbol No.	Part No.	Part Name	Description	Local
PW1	LPA10158-01A2	LOADING MOTOR BOARD ASSY		

Packing materials and accessories parts list

The instruction manual to be provided with this product will differ according to the destination.

Block No.M3MM



MODEL	MARK	MODEL	MARK
HR-J4020UA	A	HR-J7020UA	C
HR-J4020UB	B	HR-J7020UM	D

Packing and accessories

Block No. [M][3][M][M]

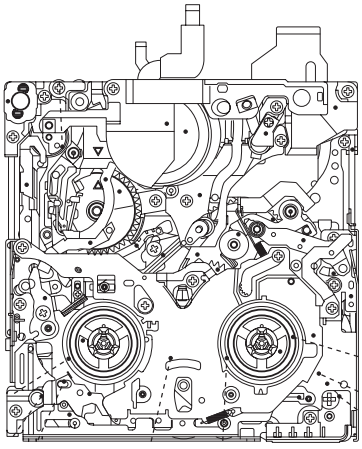
⚠ Symbol No.	Part No.	Part Name	Description	Local
301	LP31393-005B	PACKING CASE		B
301	LP31393-004A	PACKING CASE		A,C
301	LP31393-003B	PACKING CASE		D
302	LP31385-001B	CUSHION ASSY		
303	LP41038-002A	POLY BAG		
306	LP21138-001C	REMOCON		
306A	LP40991-001B	COVER(BATTERY)		
⚠ 307	QAB0057-001	LITHIUM BATTERY	CR2032	
308	QPC02202230P	POLY BAG	22cm x 22cm	
⚠ 310	LPT0933-001A	INST.BOOK	(PORTUGUESE)	B
⚠ 310	LPT0932-001A	INST.BOOK	(SPANISH)	A,C
⚠ 310	LPT0931-001A	INST.BOOK	(ENGLISH)	D
⚠ 310	LPT0931-002A	INST.BOOK	(SPANISH)	D
311	QPC02503530P	POLY BAG	25cm x 35cm	
312	QAM0501-003	RF CABLE		
330	LP41078-001A	POLY BAG		A,C
⚠ 331	QAM0027-002	CONVERSION PLUG		D

JVC

SERVICE MANUAL

MECHANISM ASSEMBLY

DVC MECHANISM
VHS-C MECHANISM
VHS MECHANISM



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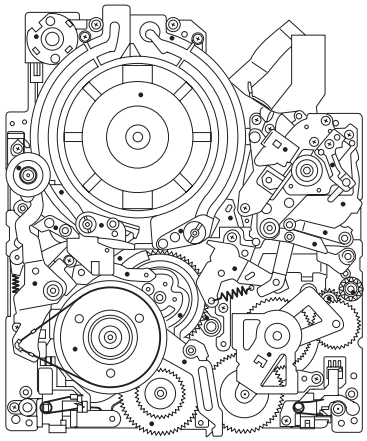

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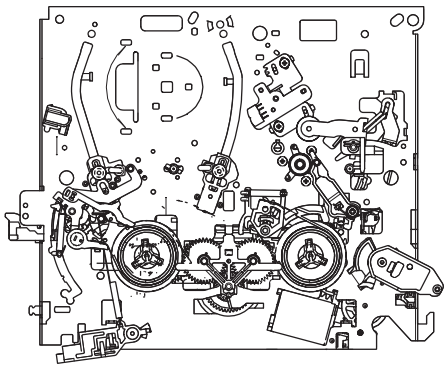

<VHS MECHANISM>

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2 SPECIFIC SERVICE INSTRUCTIONS 2-1
3 PARTS LIST 3-1

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No.86700
2003/04

SECTION 1
JIGS AND TOOLS

1.1 TOOLS REQUIRED FOR ADJUSTMENTS

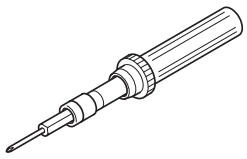
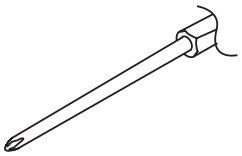
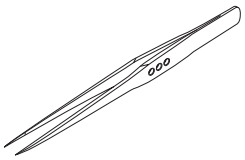
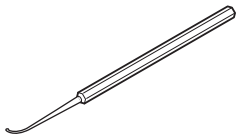
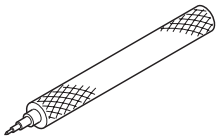
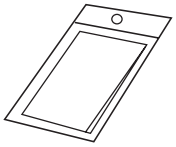
1. Torque driver YTU94088	2. Bit YTU94088-003
	
3. Tweezers P-895	4. Chip IC replacement jig PTS40844-2
	
5. Slit washer installation jig YTU94121A	6. Cleaning cloth KSMM-01
	

Fig.1-1-1

1. Torque driver
Be sure to use to fastening the mechanism and exterior parts because those parts must strictly be controlled for tightening torque.
Torque setting value of torque driver is limited. At the values over the maximum torque setting value, fasten a screw manually not to damage the screw thread.

2. Bit
This bit is slightly longer than those set in conventional torque drivers.

3. Tweezers
To be used for removing and installing parts and wires.

4. Chip IC replacement jig
To be used for replacement of part.

5. Slit washer installation jig
To be used to install slit washers.

6. Cleaning cloth
Recommended cleaning cloth to wipe down the video heads, mechanism (tape transport system), optical lens surface.

SECTION 2
SPECIFIC SERVICE INSTRUCTIONS

2.1 DVC MECHANISM

2.1.1 Precautions

(1) When fastening parts, pay careful attention to the tightening torque of each screw. Unless otherwise specified, tighten a screw with the torque of 0.055 N•m (0.56 kgf•cm).
(2) Be sure to disconnect the set from the power supply before fastening and soldering parts.
(3) When disconnecting/connecting wires, be careful not to get them and their connectors damaged.
(4) When replacing parts, be very careful neither to damage other parts nor to fit wrong parts by mistake.

2.1.2 Notes on procedure for disassembly/assembly

The disassembling procedure table (Fig. 2-1-10 on page 2-4,a part of the table is shown below for reference)shows the procedure to disassemble/reassemble mechanism parts.
Carefully read the following explanation before starting actual disassembling/reassembling work. The item numbers(circled numbers)in the following explanation correspond to those appearing under respective columns of the table.

Example

NO.	PART NAME		FIG.	POINT	NOTE	REMARKS
[1]	CASSETTE HOUSING ASSY	T	Fig.2-4-3	3(S1),(L1a)-(L1e)	**NOTE 1 a,b,c,d**	ADJUSTMENT
[2]	UPPER BASE ASSY	T	Fig.2-4-4	(S2),(L2a),(L2b)	**NOTE 2**	
[3]	DRUM ASSY	T		(S3a),2(S3b)	**NOTE 3 a,b**	
[4]	REEL DISK ASSY(SUP)	T	Fig.2-4-5	(W4)	**NOTE 4 a**	
[5]	REEL DISK ASSY(TU)	T		(W5a),(W5b),(W5c)	**NOTE 5 a,b**	
[6]	REEL COVER ASSY	T		(W6),(S6a),2(S6b)	**NOTE 6**	ADJUSTMENT

*1 *2 *3 *4 *5 *6 *7

*1 Numbers appearing in this column indicate the order to remove parts. When reassembling, follow these numbers in the reverse order. Circled numbers in this column correspond to those appearing in drawings of this section.
*2 This column shows part names corresponding to numbers in the left column.
*3 The symbol (T or B)appearing in this column shows the side which the objective part is mounted on.
T =the upper side, B =the lower side
*4 Symbols appearing in this column indicate drawing numbers.
*5 This column indicates parts and points such as screws, washers,springs,and others to be removed/fitted for disassembling/reassembling the mechanism. Besides such the parts, this column occasionally indicates working points.

P = Spring
W = Washer
S = Screw
* = Lock (L),soldering (SD),shield,connector (CN),etc.

Example

- Remove (W1)=Washer W1.
- Remove the solder at (SD1)=Point SD1.
- Disconnect A = Connector A.

*6 Numbers in this column represent the numbers of notes in the text.
(For parts that need phase adjustment after reassembling, refer to “MECHANISM ADJUSTMENTS”.)
*7 This column indicates required after-disassembling/-reassembling work such as phase adjustment or mechanism adjustment.

2.1.3 DISASSEMBLY AND ASSEMBLY OF MECHANISM ASSEMBLY

2.1.3.1 General statement

The mechanism should generally be disassembled/assembled in the C.IN mode (ASSEMBLY mode). (Refer to Fig. 2-1-1,2-1-2.) However, when the mechanism is removed from the main body, it is set in the STOP mode. Therefore, after the mechanism is removed from the main body, supply 3 V DC to the electrode on the top of the loading motor to enter the mechanism mode into the C IN mode compulsory.

<Mechanism assembly/Cassette housing assembly>

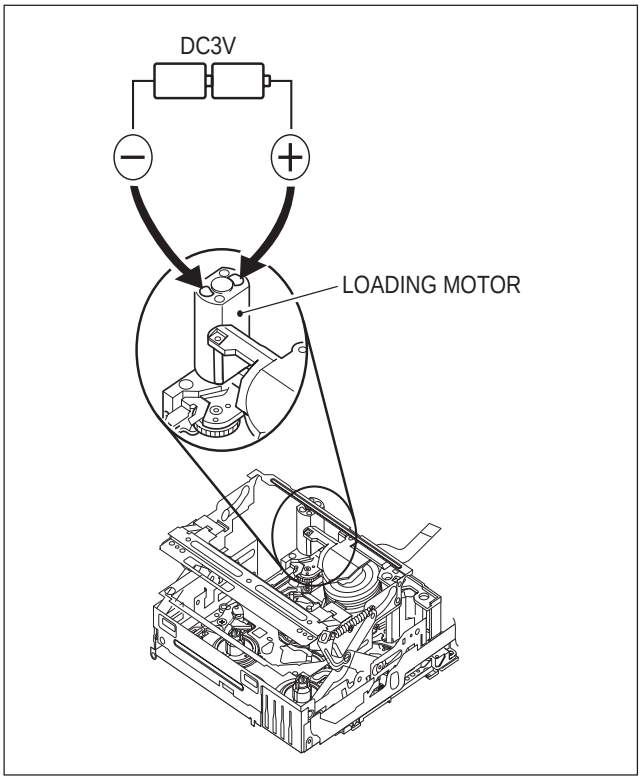


Fig.2-1-1

<Back side of the mechanism assembly>

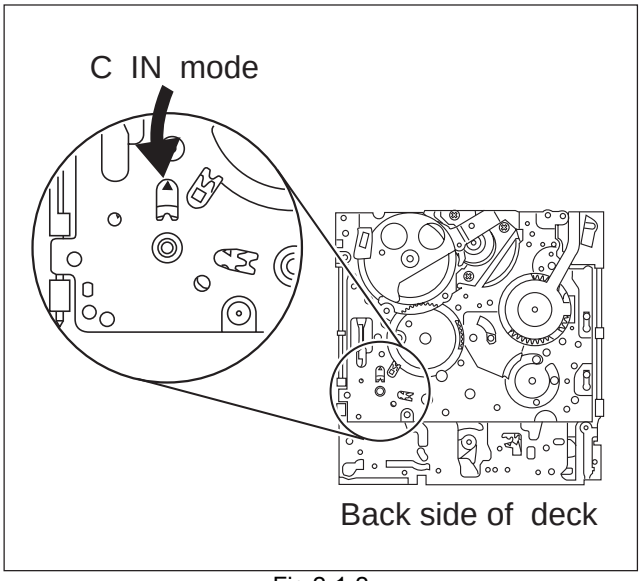


Fig.2-1-2

2.1.3.2 Explanation of mechanism mode

The mechanism mode of this model is classified into five modes as shown in Fig. 2-1-9. Each mechanism mode can be distinguished from others by the relative position of "△", "○", "⬭", "□" marks on the sub cam gear to the inner or outer protrusion on the main deck.

Refer to Fig. 2-1-3 to 2-1-8 below.

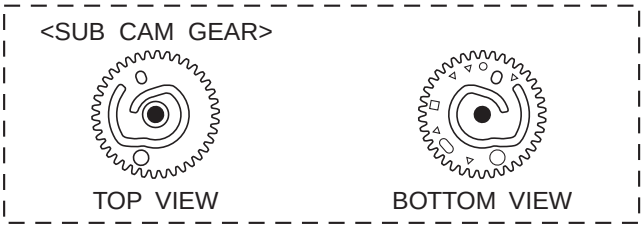


Fig.2-1-3

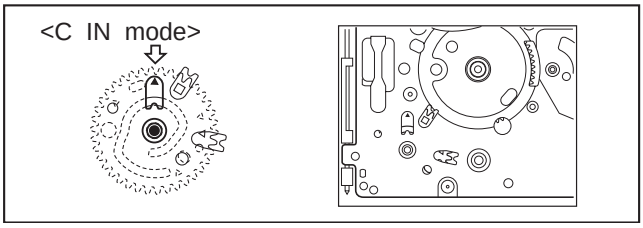


Fig.2-1-4

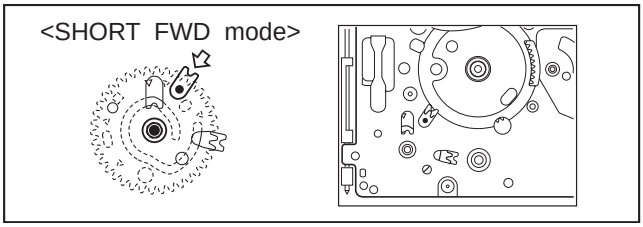


Fig.2-1-5

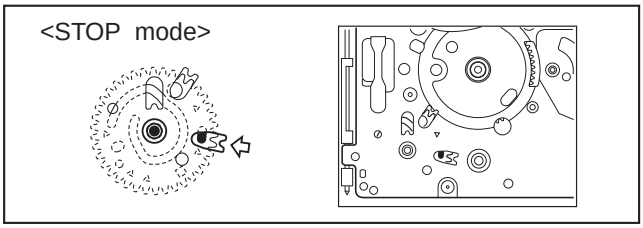


Fig.2-1-6

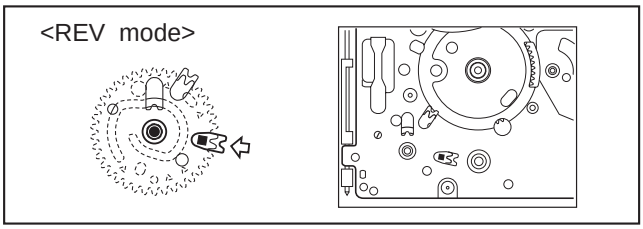


Fig.2-1-7

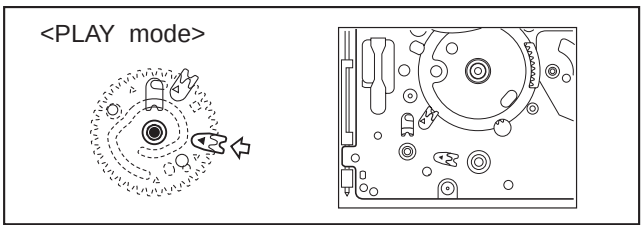


Fig.2-1-8

2.1.3.3 Mechanism timing chart

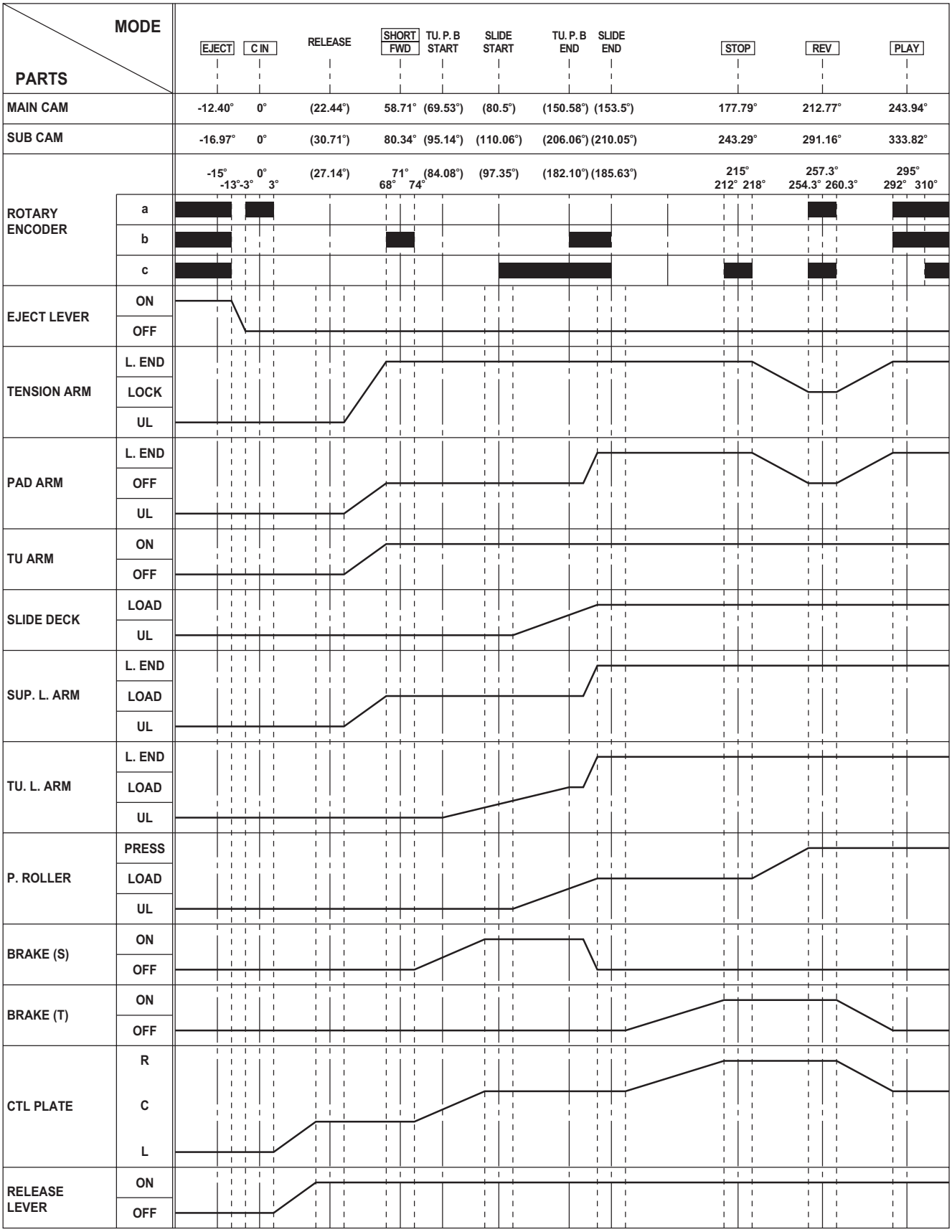


Fig.2-1-9

2.1.4 DISASSEMBLY PROCEDURE TABLE

MARK: # After assembly, perform adjustments.

NO.	PART NAME		FIG.	POINT	NOTE	REMARKS
[1]	CASSETTE HOUSING ASSY	T	Fig.2-1-14	3(S1),(L1a)-(L1e)	**NOTE 1 a,b,c,d**	ADJUSTMENT
[2]	UPPER BASE ASSY	T	Fig.2-1-15	(S2),(L2a),(L2b)	**NOTE 2**	
[3]	DRUM ASSY	T		(S3a),2(S3b)	**NOTE 3 a,b**	ADJUSTMENT
[4]	REEL DISK ASSY(SUP)	T	Fig.2-1-16	(W4)	**NOTE 4**	
[5]	REEL DISK ASSY(TU)	T		(W5a),(W5b)	**NOTE 5 a,b**	
[6]	REEL COVER ASSY	T		(W6),2(S6a),(S6b)	**NOTE 6**	
[7]	TENSION ARM ASSY	T	Fig.2-1-17	(L7)	**NOTE 7**	ADJUSTMENT / #
[8]	SLANT POLE ARM ASSY	T		(P8)	**NOTE 8**	ADJUSTMENT
[9]	TU ARM ASSY	T		(L9)	**NOTE 9**	ADJUSTMENT
[10]	SWING ARM ASSY	T		(S10)	**NOTE 10**	ADJUSTMENT
[11]	SLIDE DECK ASSY	T	Fig.2-1-18	2(S11a),(S11b),2(L11a), 2(L11b),(L11c)	**NOTE 11a,b**	ADJUSTMENT / #
[12]	PAD ARM ASSY	T	Fig.2-1-19	(P12),(L12),(W12)	**NOTE 12**	ADJUSTMENT / #
[13]	-	-		-	-	
[14]	TU BRAKE ASSY	T		(P14),(L14),(W14)	**NOTE 14**	ADJUSTMENT
[15]	TENSION CTL LEVER ASSY	T	Fig.2-1-20	(W15)	**NOTE 15**	ADJUSTMENT
[16]	CENTER GEAR	T		-	**NOTE 16**	
[17]	PINCH ROLLER ARM F. ASSY	T		(W17)	**NOTE 17**	ADJUSTMENT
[18]	TENSION CTL PLATE ASSY	T		-	**NOTE 18**	ADJUSTMENT
[19]	BRAKE CTL LEVER ASSY	T		-	**NOTE 19**	ADJUSTMENT
[20]	MOTOR BRACKET ASSY	T	Fig.2-1-21	3(S20),(L20a),2(L20b)	**NOTE 20**	ADJUSTMENT
[21]	GUIDE RAIL ASSY	T		2(W21),(S21),2(L21a),(L21b)	**NOTE 21**	ADJUSTMENT
[22]	SLIDE LEVER 2 ASSY	T		-	**NOTE 22**	ADJUSTMENT / #
[23]	LOADING PLATE ASSY	T		(W23)	**NOTE 23**	ADJUSTMENT
[24]	MODE GEAR	T		-	**NOTE 24**	
[25]	EJECT LEVER	T		(W25)	**NOTE 25**	ADJUSTMENT
[26]	BASE R ASSY	T	Fig.2-1-22	(S26a),(S26b),2(L26)	**NOTE 26**	ADJUSTMENT
[27]	ROTARY ENCODER	T		2(S27)	**NOTE 27**	PHASE ADJUSTMENT
[28]	GEAR COVER ASSY	T		(S28a),2(S28b)	-	
[29]	MAIN CAM ASSY	T		-	**NOTE 29**	PHASE ADJUSTMENT
[30]	SLIDE ARM ASSY	T	Fig.2-1-23	-	**NOTE 30**	ADJUSTMENT
[31]	CONNECT GEAR 2	T		-	**NOTE 31**	
[32]	SUB CAM ASSY	T		(S32)	**NOTE 32**	PHASE ADJUSTMENT
[33]	CONTROL ARM ASSY	T		-	**NOTE 33**	ADJUSTMENT
[34]	REEL GEAR 1	T		-	**NOTE 34**	
[35] / [36]	DRUM BASE ASSY/ CAPSTAN MOTOR	T	Fig.2-1-24	3(S35)	**NOTE 35a,b**	ADJUSTMENT
[36]	CAPSTAN MOTOR	T		(S36)	**NOTE 36**	ADJUSTMENT
[37]	MAIN DECK ASSY	T		-	-	

Fig.2-1-10

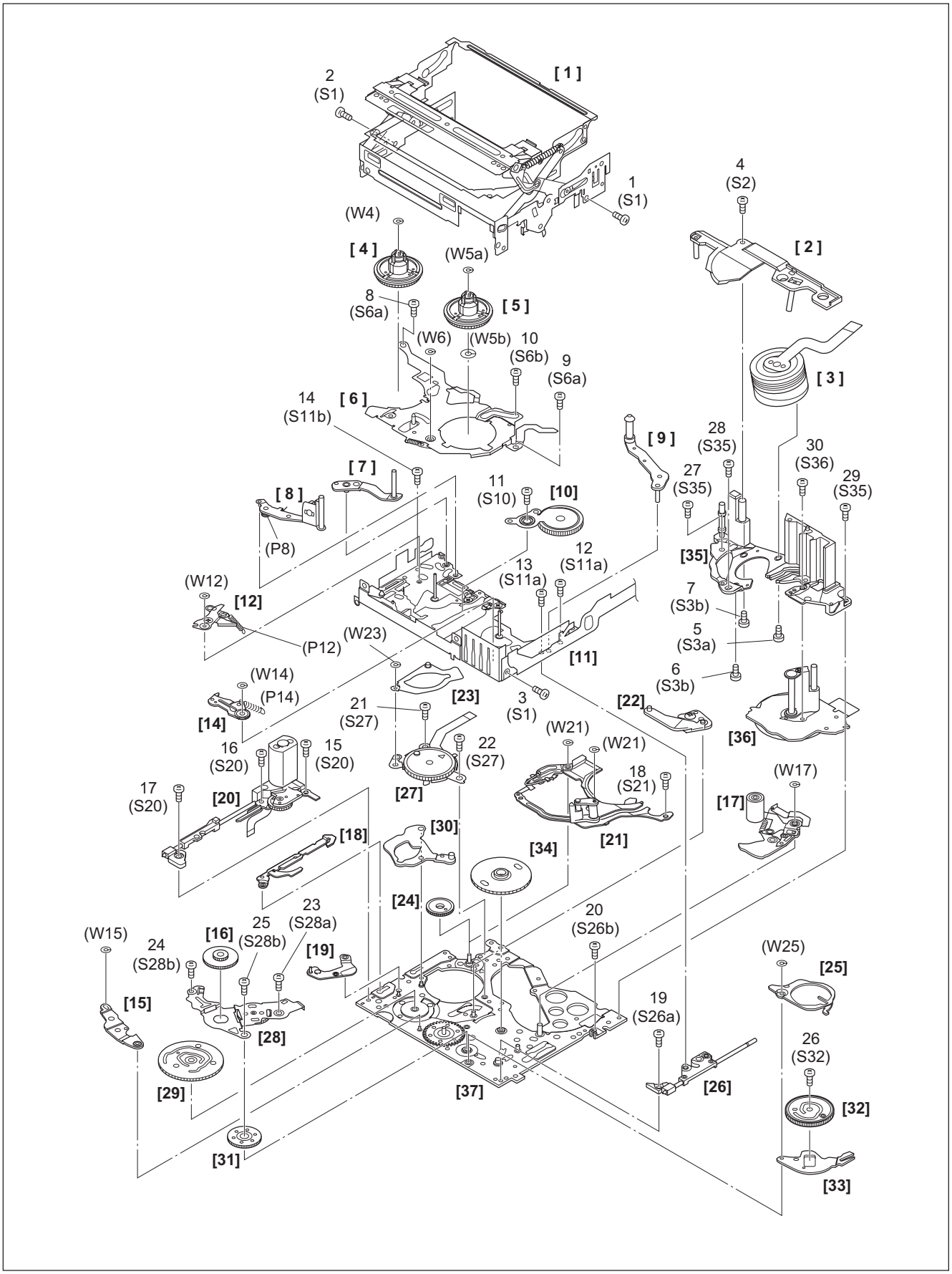

2
(S1)
[1]
1
(S1)
4
(S2)
(W4)
[4]
(W5a)
[2]
8
(S6a)
[5]
(W6)
(W5b)
10
(S6b)
9
(S6a)
[3]
14
(S11b)
[6]
[9]
28
(S35)
30
(S36)
[7]
27
(S35)
29
(S35)
[8]
11
(S10)
[10]
(P8)
12
(S11a)
[35]
(W12)
13
(S11a)
7
(S3b)
[12]
5
(S3a)
(P12)
(W23)
[11]
6
(S3b)
(W14)
[23]
3
(S1)
[22]
(P14)
21
(S27)
[14]
(W21)
[36]
16
(S20)
15
(S20)
22
(S27)
(W21)
(W17)
17
(S20)
[20]
[27]
18
(S21)
[17]
[18]
[30]
[34]
[21]
[24]
20
(S26b)
(W15)
23
(S28a)
25
(S28b)
[16]
(W25)
24
(S28b)
[19]
[25]
[15]
19
(S26a)
[28]
26
(S32)
[29]
[37]
[26]
[32]
[31]
[33]

Fig.2-1-11

< TOP VIEW >

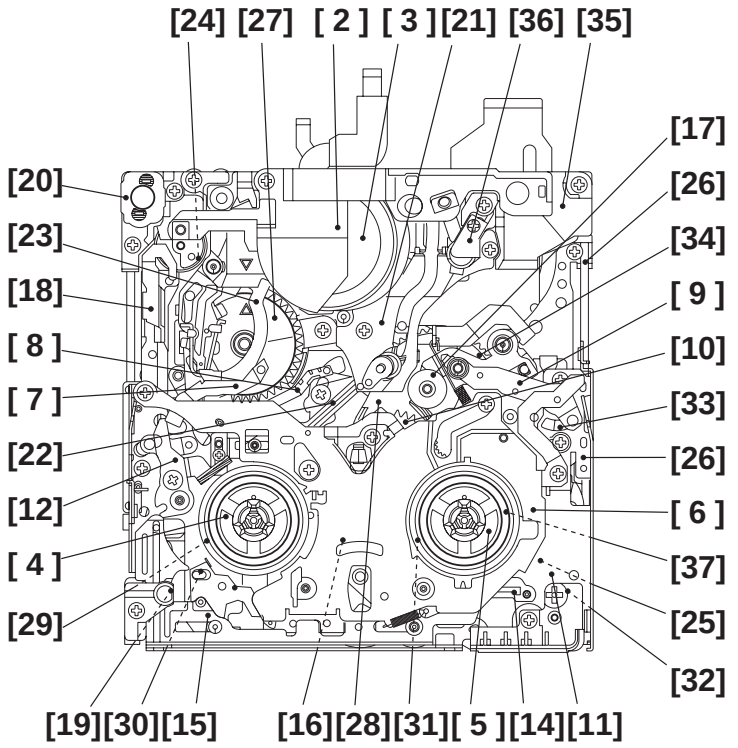


Fig.2-1-12

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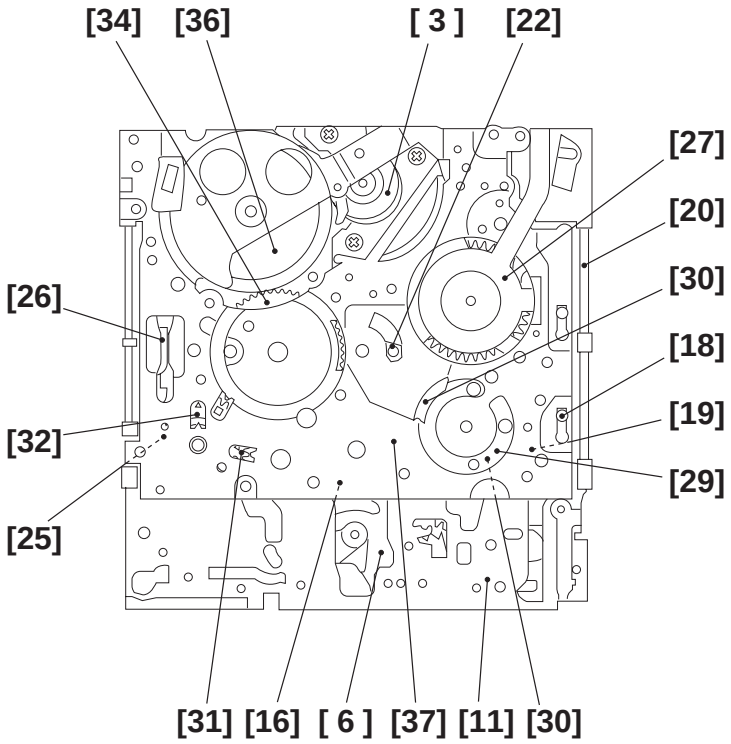


Fig.2-1-13

2.1.5 DISASSEMBLY/ASSEMBLY

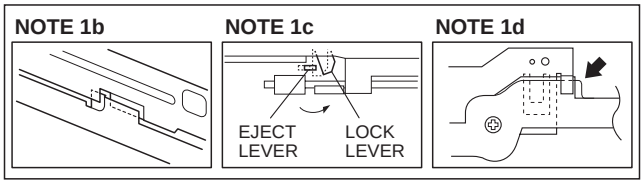
2.1.5.1 [1] CASSETTE HOUSING ASSY

NOTE 1a:
Be careful not to damage any of the parts during work.

NOTE 1b:
Special care is required in mounting.

NOTE 1c:
When mounting, the CASSETTE HOUSING ASSY should be attached in the Eject status. Pay heed to the positions of the LOCK LEVER and EJECT LEVER during mounting.

NOTE 1d:
When mounting, be sure to locate the FPC in the gap.



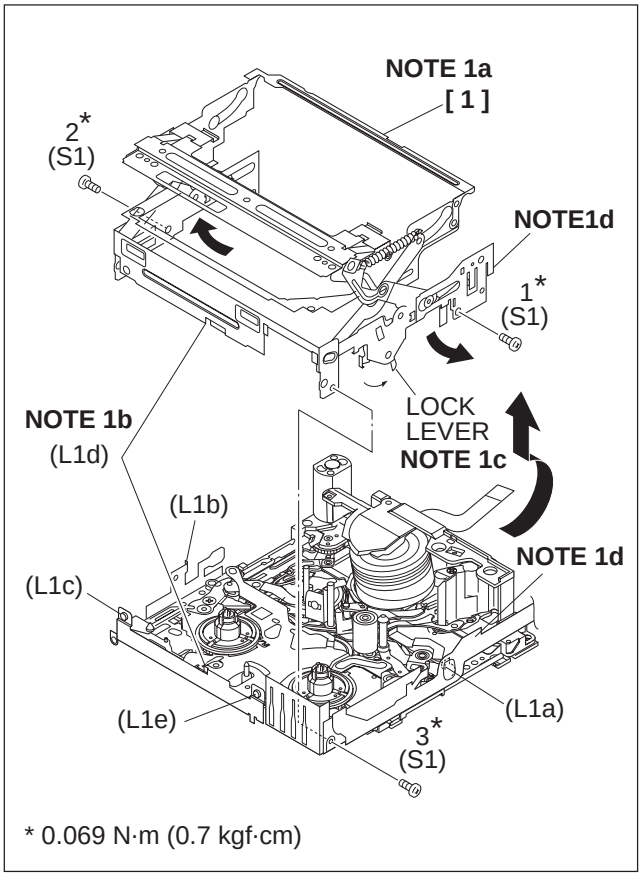


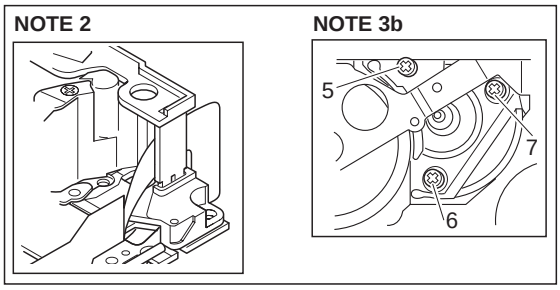
Fig.2-1-14

2.1.5.2 [2] UPPER BASE ASSY
[3] DRUM ASSY

NOTE 2:
When mounting, be sure to insert the FPC reinforcing sheet.

NOTE 3a:
Be mindful of scratches or damage during work.

NOTE 3b:
Be careful not to attach screws incorrectly.



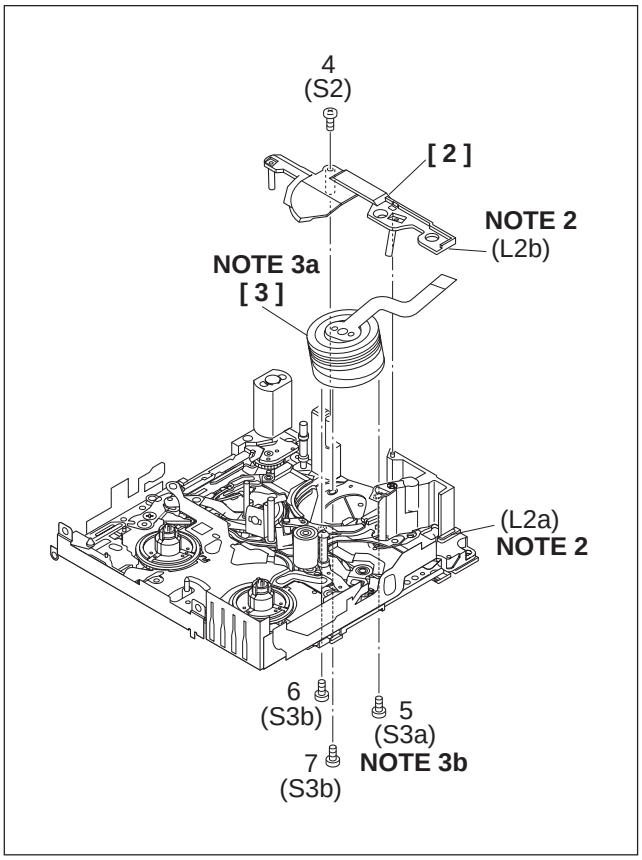


Fig.2-1-15

2.1.5.3 [4] REEL DISK ASSY(SUP)
[5] REEL DISK ASSY(TU)
[6] REEL COVER ASSY

NOTE 4:

Be careful not to attach the REEL DISK wrongly. The Supply side can be identified by the white color at the center.

NOTE 5a:

Be careful not to attach the REEL DISK wrongly. The Take-up side can be identified by the black color at the center.

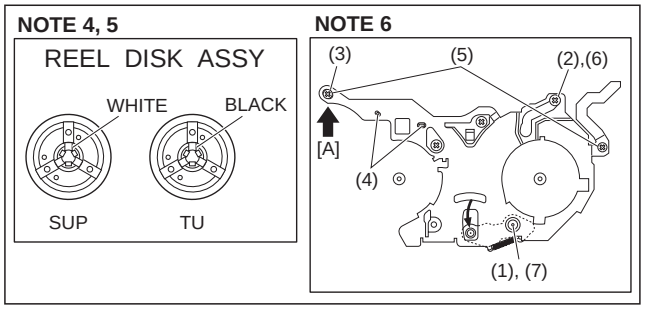
NOTE 5b

The washer is inserted under the REEL DISK.
Be carefull not to lose the washer.
Two washers are inserted under the REEL DISK in some products manufactured earlier, but one washer is inserted in the products manufactured recently and in the future.
See the parts list, and use the parts written in the parts list.

NOTE 6:

Perform the following steps for mounting.

(1) Align the hole with the pin.
(2) Attach the **[17]** PINCH ROLLER ARM FINAL ASSY by aligning the positions.
(3) Attach the SLIDE DECK ASSY (POINT[A]) by aligning the positions.
(4) Check that the parts below them are located in the correct positions.
(5) Tighten the 2 screws.
(6) Tighten the screw.
(7) Attach the 1 SLIT WASHER parts.



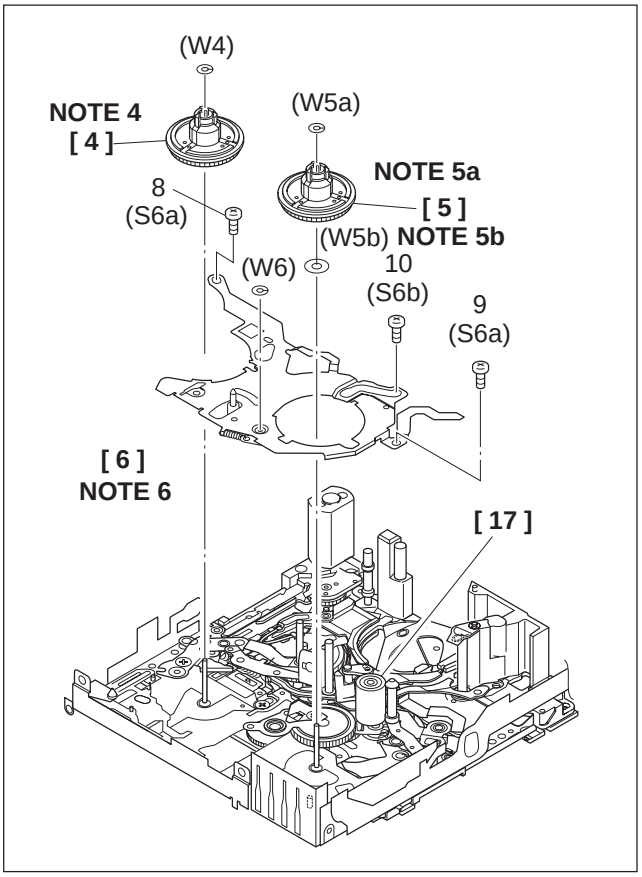


Fig.2-1-16

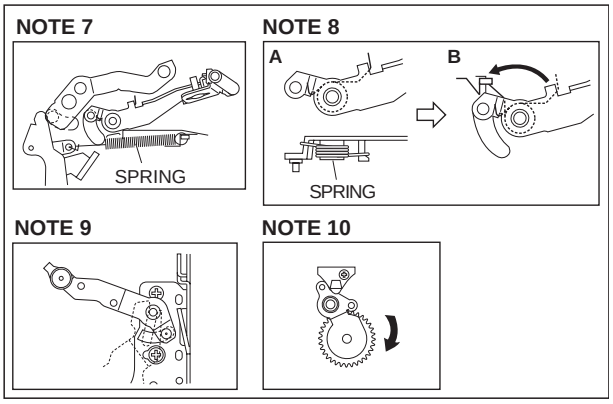
2.1.5.4 [7] TENSION ARM ASSY
[8] SLANT POLE ARM ASSY
[9] TU ARM ASSY
[10] SWING ARM ASSY

NOTE 7:
When detaching, remove the spring of the **[12]** PAD ARM ASSY in advance.
Pay attention to the attachment position.

NOTE 8:
When mounting the SLANT POLE ARM ASSY, hook the spring onto the lug as in diagram A, and fit the combination onto the SLIDE DECK ASSY. After fitting, hook the spring onto the lug of the SLIDE DECK ASSY as in diagram B.
Be careful not to lose the spring.

NOTE 9:
Pay attention to the attachment position.

NOTE 10:
When detaching, remove the screw then remove the SWING ARM ASSY by pulling it up and turning it.



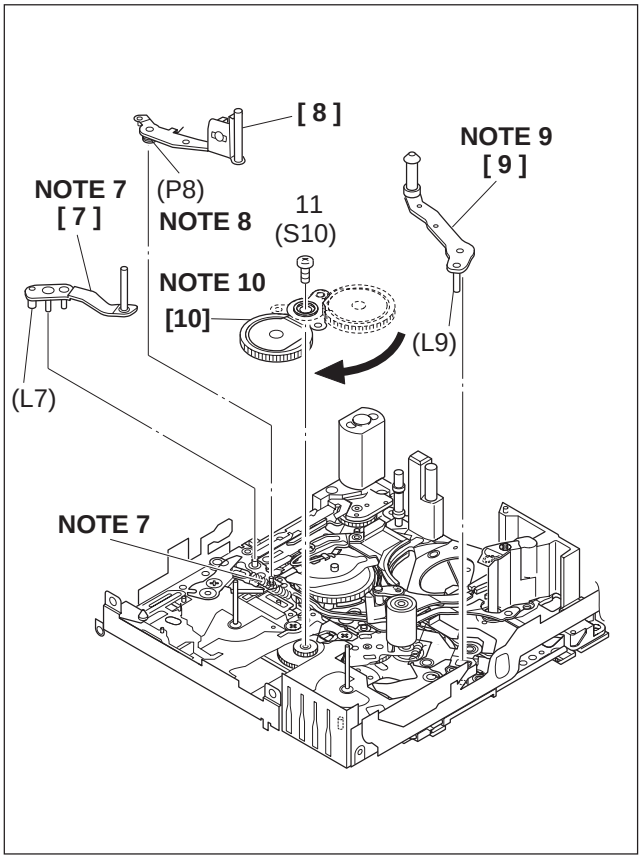


Fig.2-1-17

2.1.5.5 [11] SLIDE DECK ASSY

NOTE 11a:

Each of the parts on the SLIDE DECK ASSY can be replaced separately.

When detaching the assembly, if there is no need to replace any of its parts, remove the SLIDE DECK ASSY as it is.

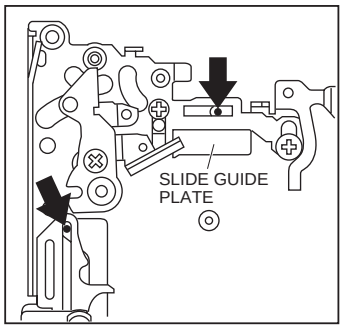
NOTE 11b:

When mounting, pay attention to the positions of the **[22]** SLIDE LEVER 2 ASSY studs and the **[19]** BRAKE CTL LEVER ASSY.

When mounting, position the CONTROL PLATE on the left side.

Pay attention to the position of the SLIDE GUIDE PLATE during mounting.

NOTE 11b



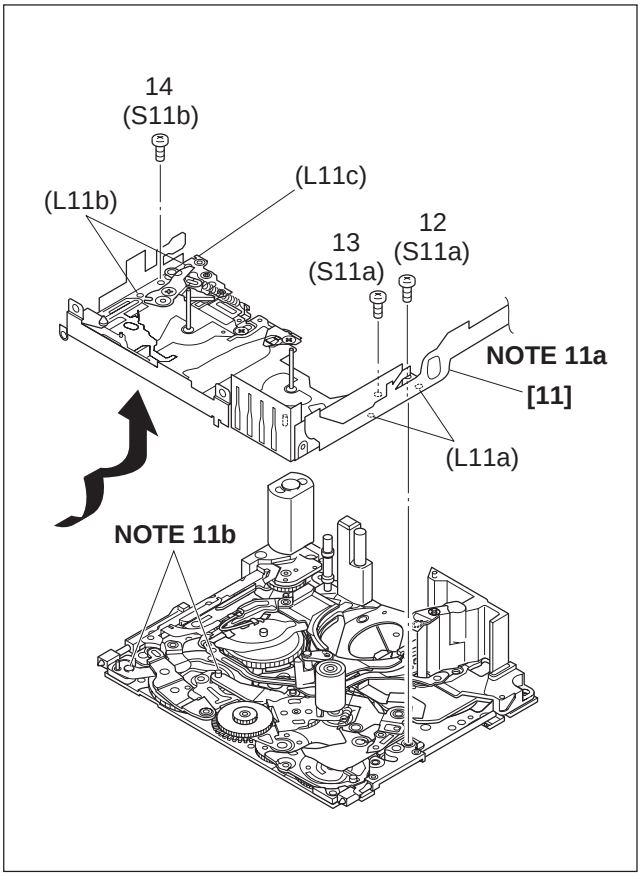


Fig.2-1-18

2.1.5.6 [12] PAD ARM ASSY
[13] -
[14] TU BRAKE ASSY

NOTE 12:

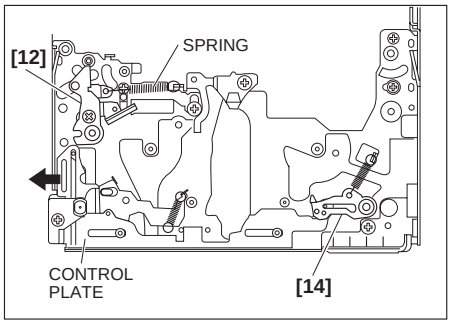
The spring may have already been disengaged when the **[8]** SLANT POLE ARM ASSY was removed.

NOTES 14:

When mounting, pay attention to the correct positioning.

Mount the CONTROL PLATE by moving it fully toward the left side.

NOTE 12,14



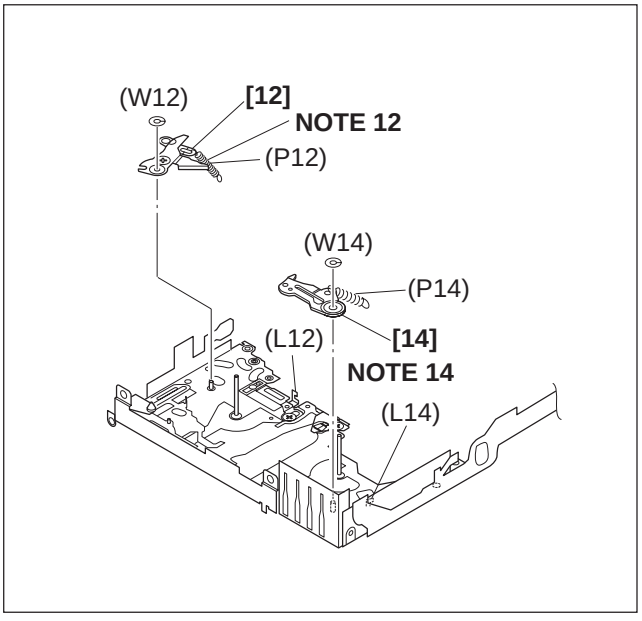


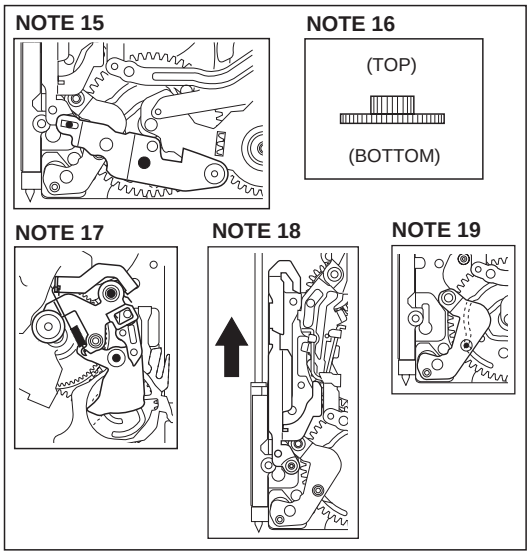
Fig.2-1-19

2.1.5.7 [15] TENSION CTL LEVER ASSY
[16] CENTER GEAR
[17] PINCH ROLLER ARM FINAL ASSY
[18] TENSION CTL PLATE ASSY
[19] BRAKE CTL LEVER ASSY

NOTES 15/16:
When mounting, pay attention to the correct positioning.

NOTE 17:
Take care against grease attachment during work.

NOTES 18/19:
When mounting, pay attention to the correct positioning.



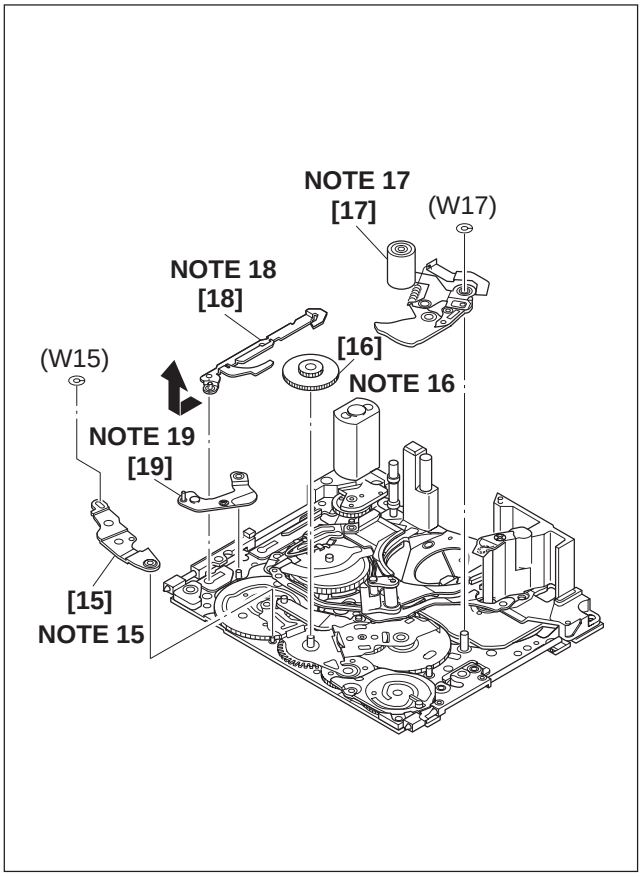


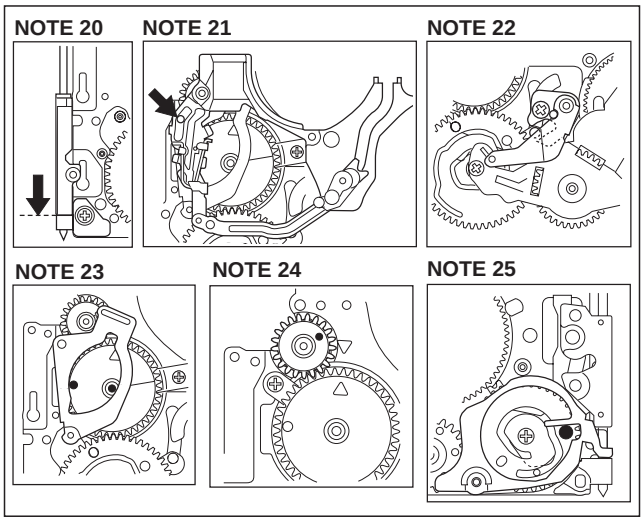
Fig.2-1-20

2.1.5.8 [20] MOTOR BRACKET ASSY
[21] GUIDE RAIL ASSY
[22] SLIDE LEVER 2 ASSY
[23] LOADING PLATE ASSY
[24] MODE GEAR
[25] EJECT LEVER

NOTE 20:
When mounting, pay attention to the positioning of the sliding parts.

NOTE 21:
When mounting, take care that no part is allowed to float or rattle.

NOTES 22/23/24/25:
When mounting, pay attention to the correct positioning.



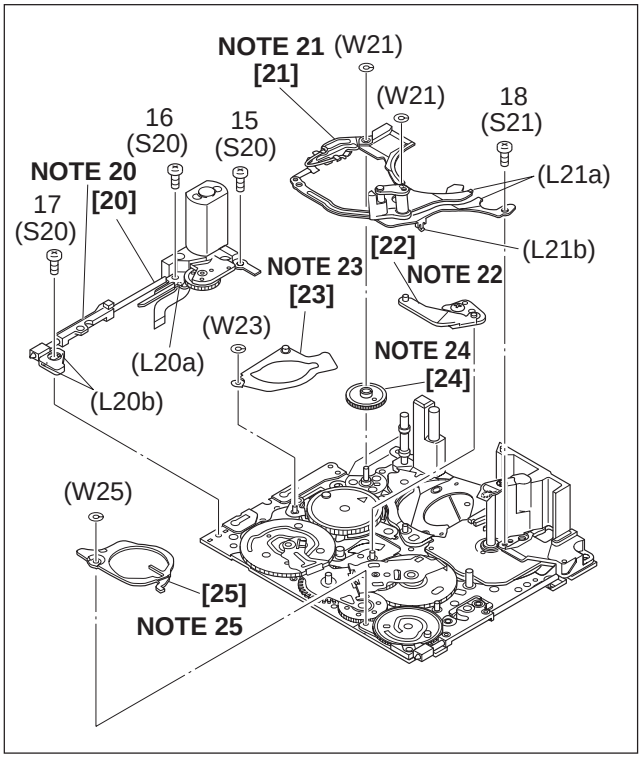


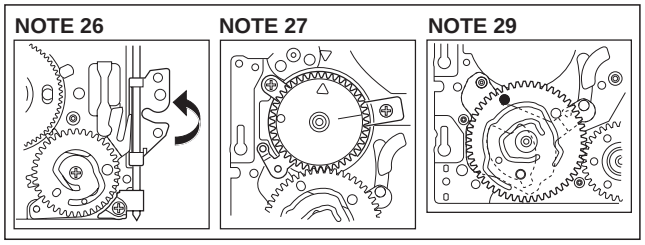
Fig.2-1-21

2.1.5.9 [26] BASE R ASSY
[27] ROTARY ENCODER
[28] GEAR COVER ASSY
[29] MAIN CAM ASSY

NOTE 26:
When mounting, fold the sliding part to the inner side.

NOTE 27:
When mounting, pay attention to the correct positioning and the FPC layout.

NOTE 29:
When mounting, pay attention to the correct positioning.



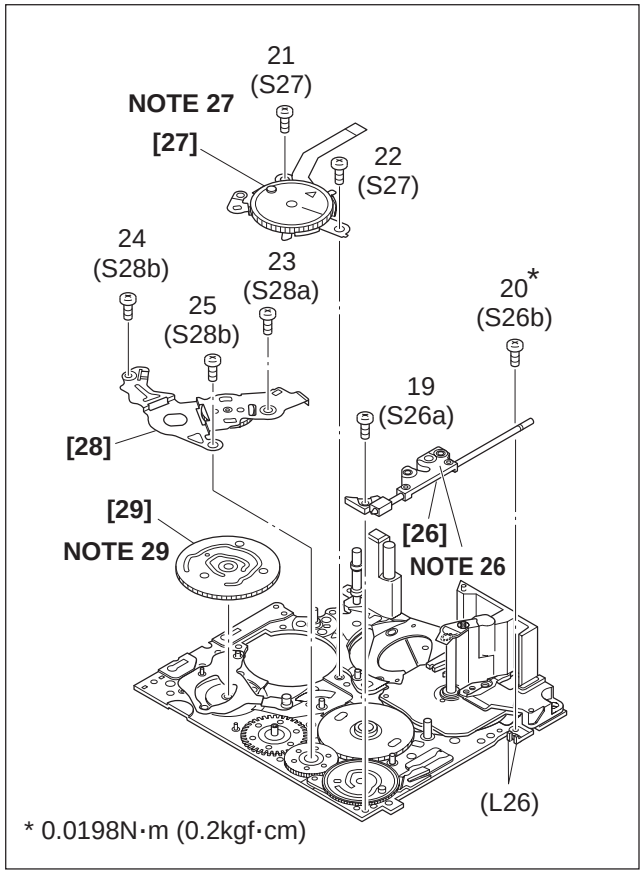


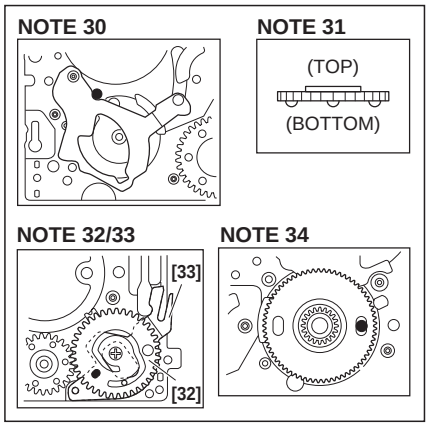
Fig.2-1-22

2.1.5.10 [30] SLIDE ARM ASSY
[31] CONNECT GEAR 2
[32] SUB CAM ASSY
[33] CONTROL ARM ASSY
[34] REEL GEAR 1

NOTE 30:
When mounting, pay attention to the correct positioning.

NOTE 31:
When mounting, pay attention to the position of the front and back.

NOTES 32/33/34:
When mounting, pay attention to the correct positioning.



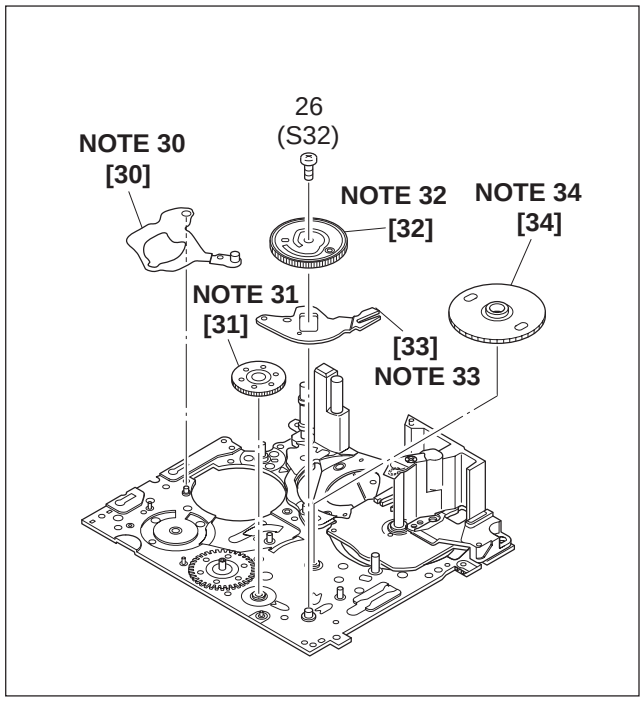


Fig.2-1-23

2.1.5.11 [35] DRUM BASE ASSY
[36] CAPSTAN MOTOR
[37] MAIN DECK ASSY

NOTES 35a/36:

Since [36]CAPSTAN MOTOR is attached to [35]DRUM BASE ASSY, remove [36]CAPSTAN MOTOR together with [35]DRUM BASE ASSY when removing [36]CAPSTAN MOTOR.

[36]CAPSTAN MOTOR should not be separated from [35]DRUM BASE ASSY except when replacing them.

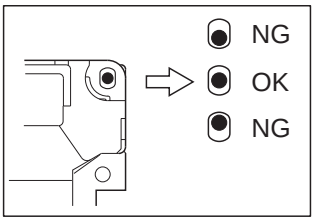
NOTE 35b:

It is very important to attach [35]DRUM BASE ASSY to the proper position.

Especially, improper engagement of [36]CAPSTAN MOTOR with [34]REEL GEAR 1 causes operational defection or abnormal sound. Therefore, confirm the attachment position before disassembly procedure.

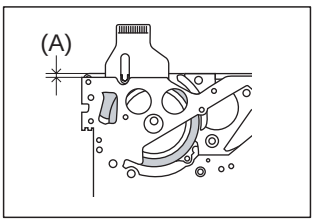
See the following figure as for the proper attachment position.

NOTE 35b



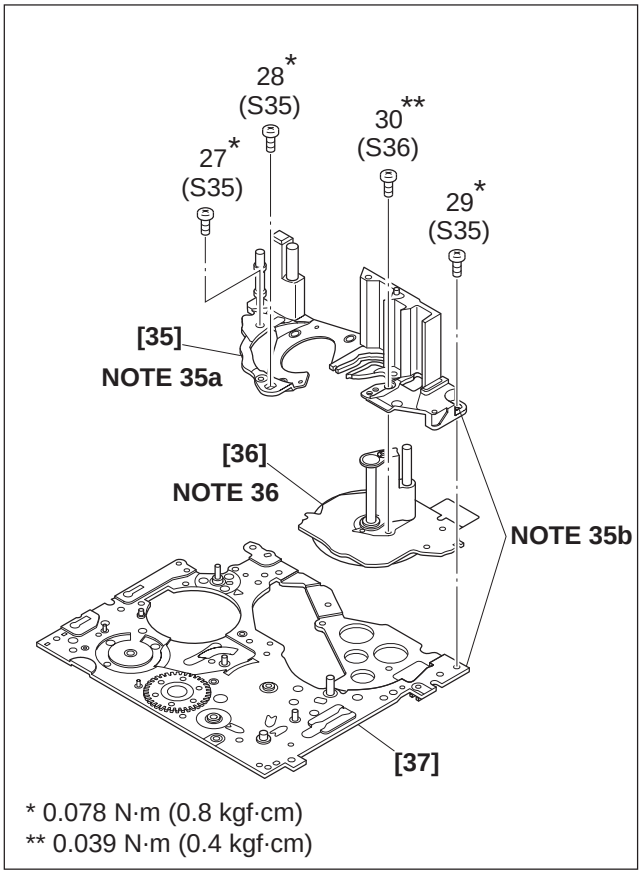
When [35]DRUM BASE ASSY is properly attached, the screw hole tends to be located at the center of the oval.

When the screw hole is located far from the center of the oval, operational defection or abnormal sound may occur.



Before removing [35]DRUM BASE ASSY, confirm the position of [35]DRUM BASE ASSY by seeing the length (A), as shown in the left figure.

When reattaching [35]DRUM BASE ASSY, confirm the position to reattach [35]DRUM BASE ASSY by seeing the length (A). Be sure to reattach [35]DRUM BASE ASSY to the same position as it has been before the removing procedure.



* 0.078 N·m (0.8 kgf·cm)
** 0.039 N·m (0.4 kgf·cm)

Fig.2-1-24

2.1.6 CHECKUP AND ADJUSTMENT OF MECHANISM PHASE

[24]MODE GEAR

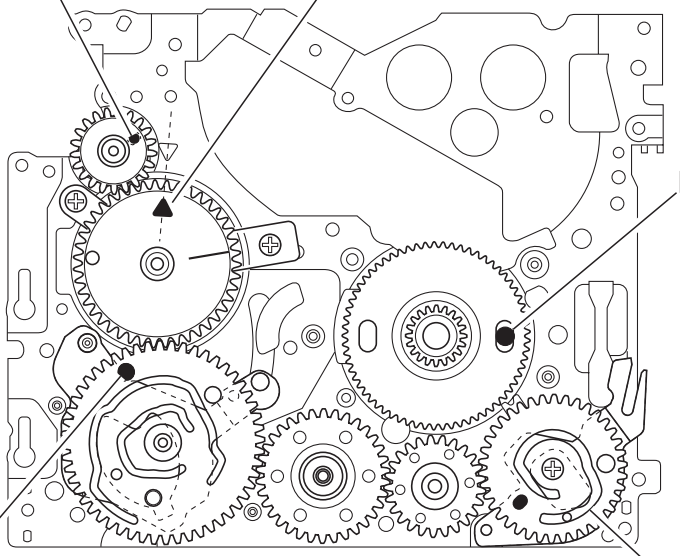
Align the MODE GEAR with the Main Deck Assembly hole.

Note:
The MODE GEAR may be displaced during the mechanism operation, however it can be checked from the rear and realigned during manual assembly.

[27]ROTARY ENCODER

Mount the ROTARY ENCODER by aligning its mark (△) and the mark (▽) of the Main Deck Assembly.

Note:
Be careful when handling the FPC during mounting.



[34]REEL GEAR 1

Align the REEL GEAR 1 with the Main Deck Assembly hole.

Note:
The REEL GEAR 1 may be displaced during mechanism operation, however this can be checked from the rear and realigned during manual assembly.

[29]MAIN CAM ASSY/[30]SLIDE ARM ASSY

When mounting the SLIDE ARM ASSY align it with the Main Deck Assembly and MAIN CAM ASSY holes.

Note:
During the mounting procedure, make sure that the[32] SUB CAM ASSY is in the correct mounting position.

[32]SUB CAM ASSY/[33] CONTROL ARM ASSY

Mount the SUB CAM ASSY hole to align with the CONTROL ARM ASSY and Main Deck Assembly holes and then tighten them all together with a screw.

Note:
When mounting it, make sure that the[29]MAIN CAM ASSY is in the correct mounting position.

Fig.2-1-25

2.1.7 MECHANISM ADJUSTMENTS

2.1.7.1 Adjustment of the slide guide plate

Use Fig. 2-1-26 as the reference unless otherwise specified.

(1) Set the PLAY mode. See Fig. 2-1-8.
(2) Loosen the screws (**A**, **B**).
(3) With the Main Deck and Slide Deck Assemblies pushed into the unit, tighten the screws (**A**, **B**) while applying pressure to the stud (shaft) on the Slide Guide plate.
The pressure applied should be enough to enable utilization of the rebounding force of the springs.
The tightening torque should be 0.069 N•m (0.7 kgf•cm).
(4) Check the operation.
Repeat unloading and loading several times and make sure that these operations can be performed smoothly without producing rattles.

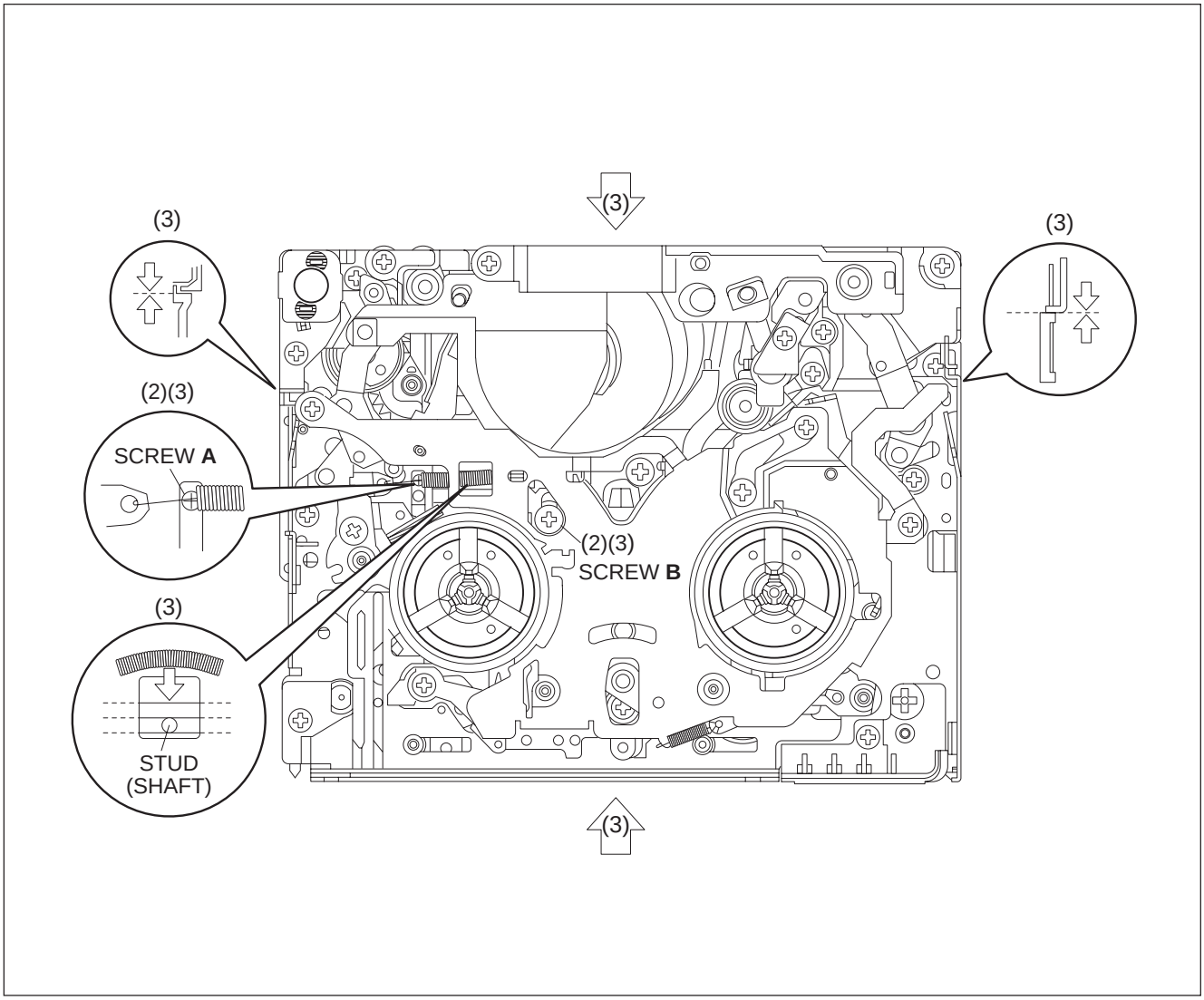


Fig.2-1-26

2.1.7.2 Adjustment of the Tension Arm and Pad Arm Assemblies

Use Fig. 2-1-27 as the reference unless otherwise specified.

(1) Set the PLAY mode.
See Fig. 2-1-8.
(2) Loosen the screw **A**.
(3) With the take-up side at the bottom, align the extreme end of the Tension Arm Assembly with the crossed grooves on the screw **B** that retains the Loading Motor Assembly and then tighten the screw **A**.
The tightening torque should be 0.069 N•m (0.7 kgf•cm).
(4) Check the operation.
Repeat unloading and loading several times and make sure that the Tension Arm Assembly is located within the normal range.

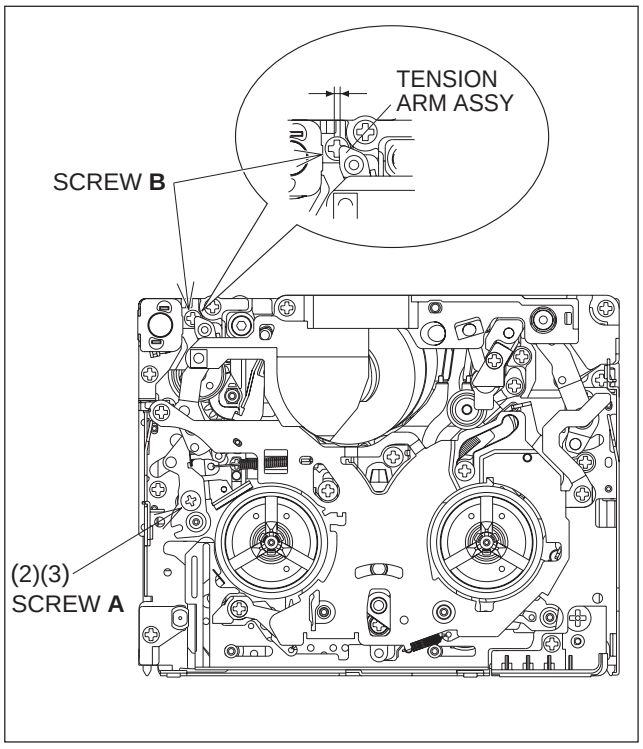


Fig.2-1-27

2.1.7.3 Adjustment of the Slide Lever 2

Use Fig. 2-1-28 as the reference unless otherwise specified.

(1) Set the C IN mode.
See Fig. 2-1-4.
(2) Loosen the screw **A**.
(3) Set the Main Deck and Slide Deck Assemblies apart so that they do not rattle, then tighten the screw **A** by screwing it fully toward the Drum Assembly.
The tightening torque should be 0.069 N•m (0.7 kgf•cm).
(4) Check the operation.
Repeat unloading and loading several times and make sure that these operations can be performed smoothly without producing rattles.

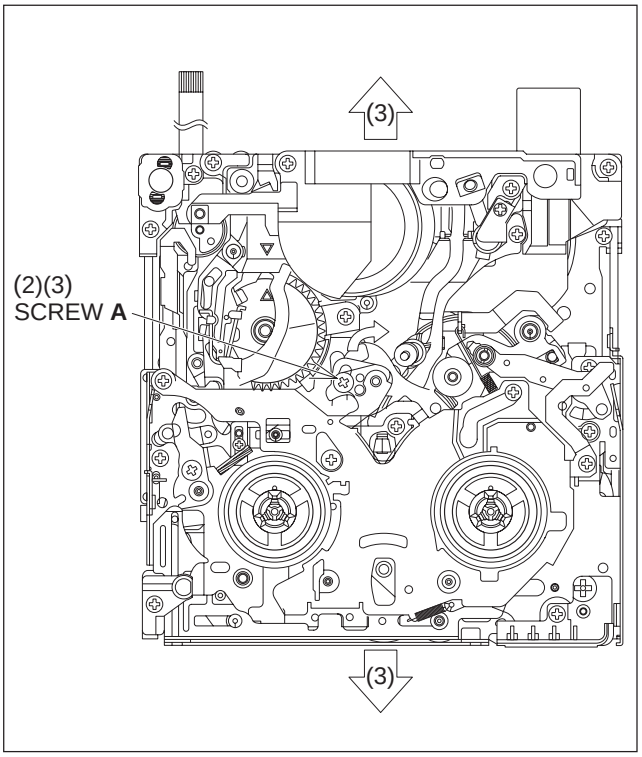


Fig.2-1-28

2.1.8 SERVICE NOTE

Use the following chart to manage mechanism parts that are removed for disassembling the mechanism.

Fig.2-1-14

[1] CASSETTE HOUSING ASSY

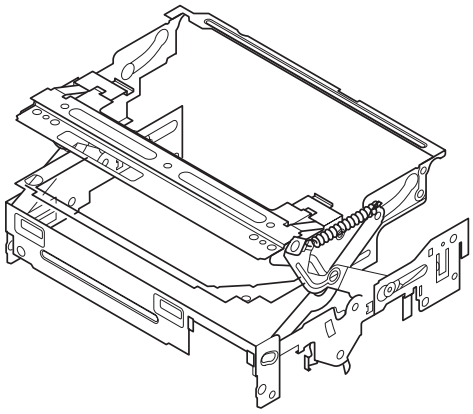


Fig.2-1-15

[2] UPPER BASE ASSY

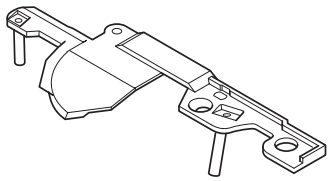


Fig.2-1-15

[3] DRUM ASSY

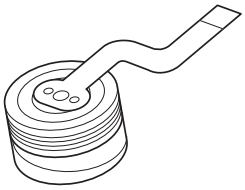
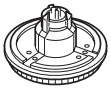
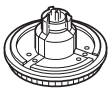


Fig.2-1-16

[4] REEL DISK ASSY(SUP)



[5] REEL DISK ASSY(TU)



[6] REEL COVER ASSY

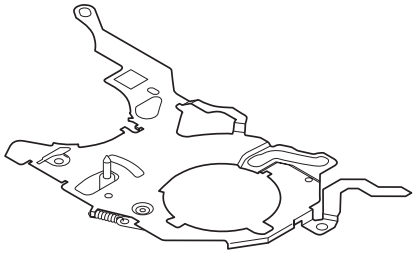
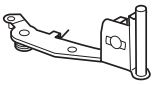


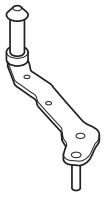
Fig.2-1-17

[7] TENSION ARM ASSY

[8] SLANT POLE ARM ASSY



[9] TU ARM ASSY



[10] SWING ARM ASSY

Fig.2-1-18

[11] SLIDE DECK ASSY

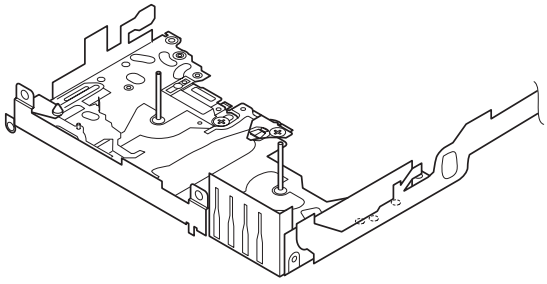


Fig.2-1-19

[12] PAD ARM ASSY

[13]

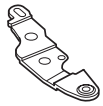
—

[14] TU BRAKE ASSY

Fig.2-1-29

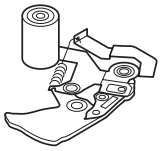
Fig.2-1-20

[15] TENSION CTL LEVER ASSY

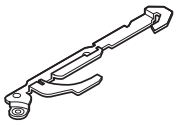


[16] CENTER GEAR

[17] PINCH ROLLER ARM F. ASSY



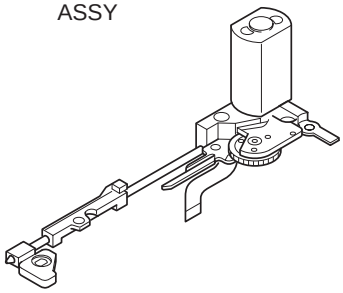
[18] TENSION CTL PLATE ASSY



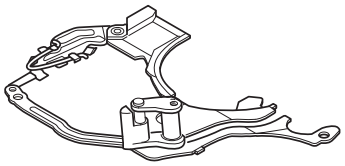
[19] BRAKE CTL LEVER ASSY

Fig.2-1-21

[20] MOTOR BRACKET ASSY



[21] GUIDE RAIL ASSY



[22] SLIDE LEVER 2 ASSY

[23] LOADING PLATE ASSY

[24] MODE GEAR

[25] EJECT LEVER

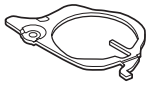
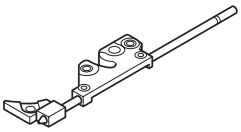
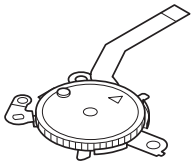


Fig.2-1-22

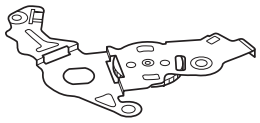
[26] BASE R ASSY



[27] ROTARY ENCODER



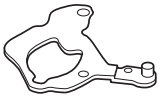
[28] GEAR COVER ASSY



[29] MAIN CAM ASSY

Fig.2-1-23

[30] SLIDE ARM ASSY



[31] CONNECT GEAR 2

[32] SUB CAM ASSY

[33] CONTROL ARM ASSY

[34] REEL GEAR 1

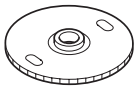
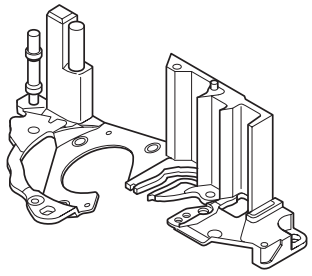
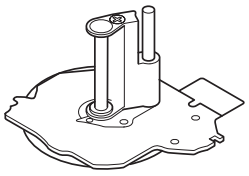


Fig.2-1-24

[35] DRUM BASE ASSY



[36] CAPSTAN MOTOR



[37] MAIN DECK ASSY

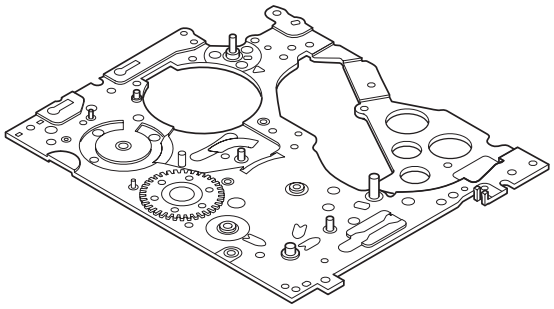


Fig.2-1-30

2.1.9 SERVICE NOTE

Use the following chart to manage screws.

Symbol No.	[1]			[2]	[3]			[6]			[10]	[11]			[20]			[21]	[22]	
Removing order of screw	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Place to stick screw																				
Reference drawing (Fig. No.2-1-**)	14				15				16		17		18			21			22	
Screw tightening torque	Ⅰ				Ⅱ															Ⅲ

Symbol No.	[27]			[28]			[32]	[35]			[36]
Removing order of screw	21	22	23	24	25	26	27	28	29	30	
Place to stick screw											
Reference drawing (Fig. No.2-1-**)	22					23	24				
Screw tightening torque	Ⅱ						Ⅳ			Ⅴ	

<NOTE>

·Pay careful attention to tightening torque for each screw.

Ⅰ : 0.069N·m(0.7kgf·cm)　　Ⅱ : 0.055N·m(0.56kgf·cm)　　Ⅲ : 0.0198N·m(0.2kgf·cm)

Ⅳ : 0.078N·m(0.8kgf·cm)　　Ⅴ : 0.039N·m(0.4kgf·cm)

Fig.2-1-31

2.1.10 REMARKS

2.1.10.1 Cleaning

(1) For cleaning of the upper drum (particularly video heads), use fine-woven cotton cloth with alcohol soaks through. Do not move the cloth but turn the upper drum counterclockwise.

NOTE:
Make sure not to move the cloth in the vertical direction to the video head, since it may cause damage of the video heads.

(2) For cleaning of parts of the tape transport system except the upper drum, use fine-woven cotton cloth or cotton swab soaked alcohol.

(3) After cleaning, confirm that the cleaned parts are completely dry before loading the deck with cassette tape.

2.1.10.2 Applying oil and grease

(1) Periodical oiling and greasing are not required but should be done to new parts when replacing. If oil and grease on the other parts of the other party are old and dirty, wipe them clean and apply new oil or grease.

(2) For parts and points to apply oil and grease, refer to the exploded view of the 3.1 DVC MECHANISM ASSEMBLY. Fig.2-1-32 specifies oil and grease to be used.

(3) When oiling, clean the objective parts with alcohol first and apply one or two drop(s) of oil. Too much oiling causes rotary parts to slip because of oil leakage.

Classification	Part No.	Symbol in drawing
Grease	KYODO-SH-JB	AA
Oil	YTU94027	BB
Grease (HANARL)	RX-410R	CC

specifies oil and grease to be used

Fig.2-1-32

2.2 VHS-C MECHANISM

2.2.1 Precautions

(1) When fastening parts, pay careful attention to the tightening torque of each screw. Unless otherwise specified, tighten a screw with the torque of 0.216 N•m (2.2 kgf•cm). Torque setting value of torque driver is limited. At the values over the maximum torque setting value, fasten a screw manually not to damage the screw thread.
(2) Be sure to disconnect the set from the power supply before fastening and soldering parts.
(3) When disconnecting/connecting wires, be careful not to get them and their connectors damaged.
(4) When replacing parts, be very careful neither to damage other parts nor to fit wrong parts by mistake.

Example

STEP/LOC. No.	PART NAME		FIG.	REMOVAL POINT	INSTALLATION ADJUSTMENT CONDITION NOTE
[1]	ROLLER BASE ASSEMBLY	T	M1	(S1)	–
[2]	TENSION ARM ASSEMBLY	T	M1	(P1), (W1a)	–
[3]	REEL DISC (SUP)	T	M1	(W1a), (W1b)	–
↑ *1	↑ *2	↑ *3	↑ *4	↑ *5	↑ *6

2.2.2 How to read the disassembly and assembly

*1 Order of steps in Procedure
When reassembling, perform the step(s) in the reverse order. These numbers are also used as the identification (location) No. of parts Figures.
*2 Part to Name be removed or installed.
*3 Location of part.

T = The Upper side
B = The Lower side

*4 Fig. No. showing Procedure or Part Location.
M = Mechanism
*5 Identification of part to be removed, unhooked, unlocked, released, unplugged, unclamped or unsoldered.

P = Spring
W = Washer
S = Screw
* = Unhook, unlock, release, unplug or unsolder.

Example

- Remove (W1)=Washer W1.
- Remove the solder at (SD1)=Point SD1.
- Disconnect A = Connector A.

*6 Adjustment information for installation.
(+) = Refer to Exploded Views for Lubrication information.

2.2.3 DISASSEMBLY/ASSEMBLY PROCEDRURE TABLE

This procedure starts with the condition that the cabinet parts and deck parts. Also, all the following procedures for adjustment and parts replacement should be performed in STOP mode. When reassembling, perform the step(s) in the reverse order.

STEP/LOC. No.	PART NAME		FIG.	REMOVAL POINT	INSTALLATION ADJUSTMENT CONDITION NOTE
[1]	ROLLER BASE ASSY	T	M1	(1)	–
[2]	TENSION ARM ASSY	T	M1	(P1), (W1a)	–
[3]	REEL DISC	T	M1	(W1a), (W1b)	–
[4]	SLANT ARM ASSY	T	M1	(W1a)	–
[5]	CANCEL LEVER ASSY	T	M2	(W2)	–
[6]	EJECT LEVER ASSY	T	M2	(W2)	–
[7]	CASSETTE GUIDE (LEFT)	T	M2	(2)	–
[8]	SUPPLY CLUTCH ASSY	T	M2	(W2)	–
[9]	WHEEL GEAR	T	M2	(W2)	See, Adjustment procedure for Section 2.2.5
[10]	ROTARY ENCODER	B	M3	4(S3a)	The function of this part varies according to the ASSY (VHS/SVHS) which this part is rporated in. (Refer to fig. 2-2-6)
[11]	TIMING BELT	B	M3	–	–
[12]	CENTER PULLEY UNIT	T/B	M3	2(S3a)	–
[13]	CASSETTE GUIDE (R) ASSY	T	M3	(S3b), (P3)	(Only use SVHS model)
[14]	TAKE UP GEAR	T	M3	(W3a)	–
[15]	BRAKE SUB GEAR	T	M3	(W3a)	–
[16]	PINCH ROLLER ARM ASSY	T	M3	(W3b)	–
[17]	TAKE UP GUIDE ARM ASSY	T	M3	(W3a)	–
[18]	LINK ARM ASSY	T	M4	(W4)	–
[19]	LED GUIDE	T	M4	(S4a)	–
[20]	A/C HEAD UNIT	T	M4	2(S4b)	–
[21]	SLANT POLE BASE ASSY	T	M5	(S5a)	–
[22]	CAPSTAN MOTOR	T	M5	3(S5a)	–
[23]	MOTOR BASE	T	M5	2(S5b), (S5c)	–
[24]	BRUSH	B	M6	(S6a)	–
[25]	DRUM FINAL ASSY	T/B	M6	2(S6b), 2(S6c) *CATCHER	–
[26]	GUIDE RAIL	T	M6	7(S6d), 8(S6d)	(Refer to part list.)
[27]	POLE BASE (S)ASSY	T	M6	–	–
[28]	POLE BASE (T)ASSY	T	M6	–	–
[29]	COVER PLATE	T	M7	–	–
[30]	DRIVE LEVER ASSY	T	M7	–	–
[31]	MOTOR BRACKET ASSY	T	M7	3(S7)	–
[32]	CONTROL CAM	T	M8	(W8a)	See, Adjustment procedure for Section 2.2.5
[33]	LINK LEVER	T	M8	_	See, Adjustment procedure for Section 2.2.5
[34]	MIDDLE GEAR	T	M8	–	–
[35]	LOADING GEAR(T) ASSY	T	M8	(W8b)	See, Adjustment procedure for Section 2.2.5
[36]	LOADING GEAR(S) ASSY	T	M8	(W8b)	–
[37]	LOADING RING ASSY	T	M8	4(S8)	See, Adjustment procedure for Section 2.2.5

Fig.2-2-1

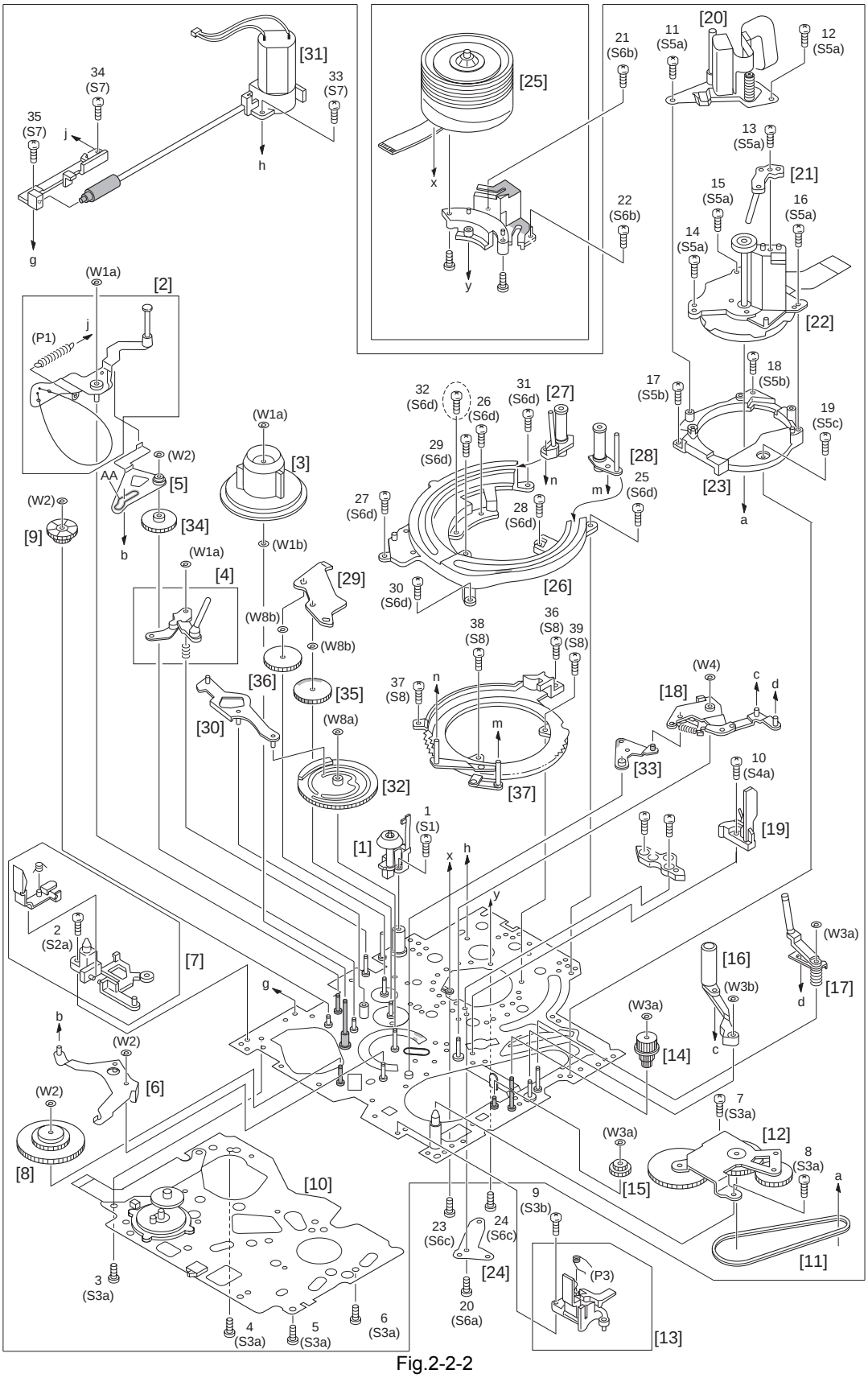

[31]
34 (S7)
33 (S7)
35 (S7)
j
h
g
[25]
x
y
21 (S6b)
22 (S6b)
[20]
11 (S5a)
12 (S5a)
13 (S5a)
[21]
15 (S5a)
16 (S5a)
14 (S5a)
[22]
(W1a)
[2]
(P1)
j
AA
(W2)
[5]
b
[34]
[9]
(W2)
(W1a)
[3]
(W1b)
[4]
[29]
(W8b)
(W8b)
[36]
[35]
[30]
(W8a)
[32]
32 (S6d)
26 (S6d)
31 (S6d)
[27]
29 (S6d)
n
[28]
m
25 (S6d)
27 (S6d)
28 (S6d)
[26]
30 (S6d)
17 (S5b)
18 (S5b)
19 (S5c)
[23]
a
38 (S8)
36 (S8)
39 (S8)
37 (S8)
n
m
[37]
(W4)
c
d
[18]
[33]
10 (S4a)
[19]
[1]
1 (S1)
x
h
y
2 (S2a)
[7]
g
b
(W2)
[6]
(W2)
[8]
[10]
3 (S3a)
4 (S3a)
5 (S3a)
6 (S3a)
23 (S6c)
24 (S6c)
9 (S3b)
[24]
20 (S6a)
(P3)
[13]
(W3a)
[16]
(W3b)
c
(W3a)
[14]
(W3a)
[17]
d
7 (S3a)
(W3a)
[15]
[12]
8 (S3a)
a
[11]

Fig.2-2-2

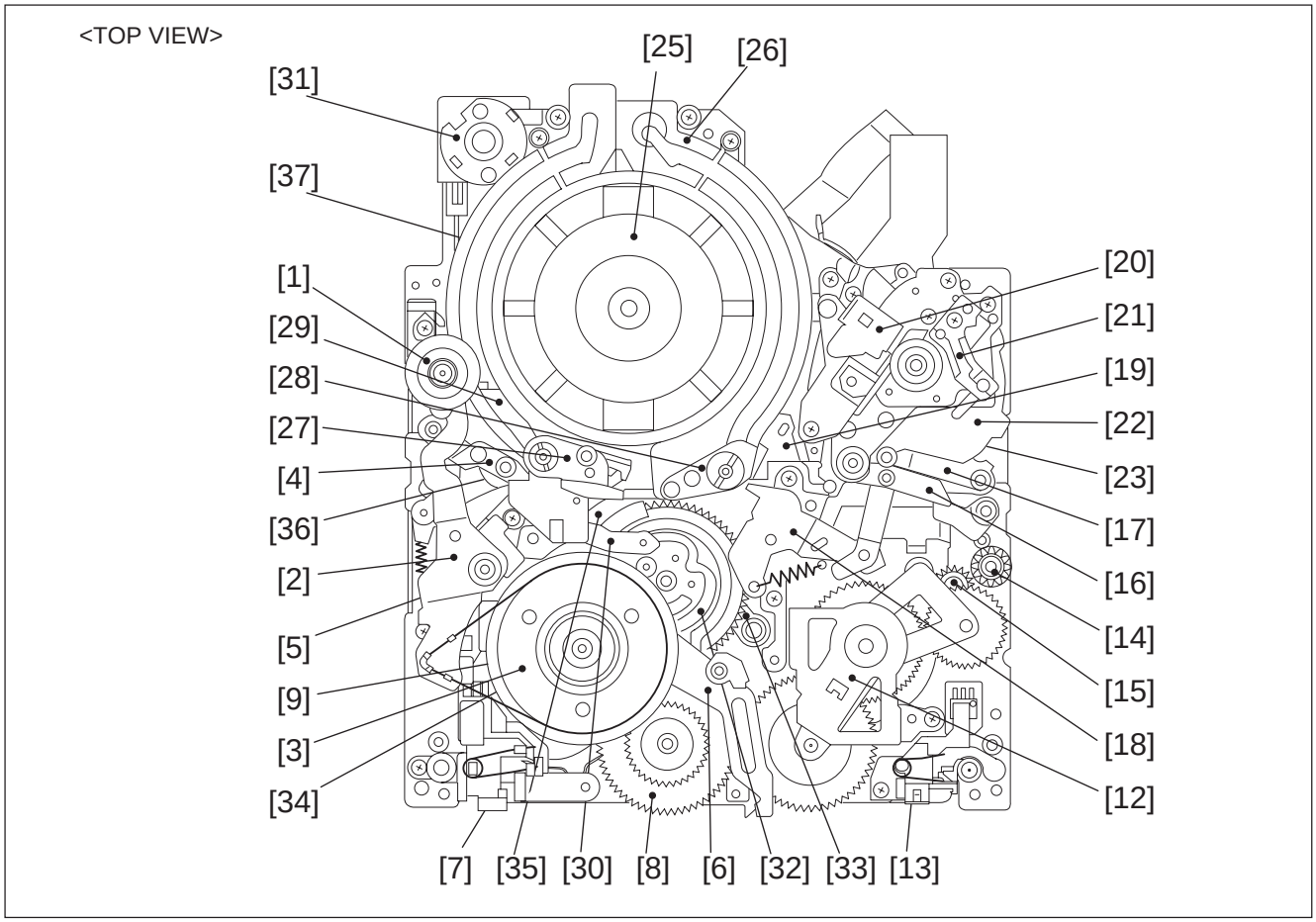


Fig.2-2-3

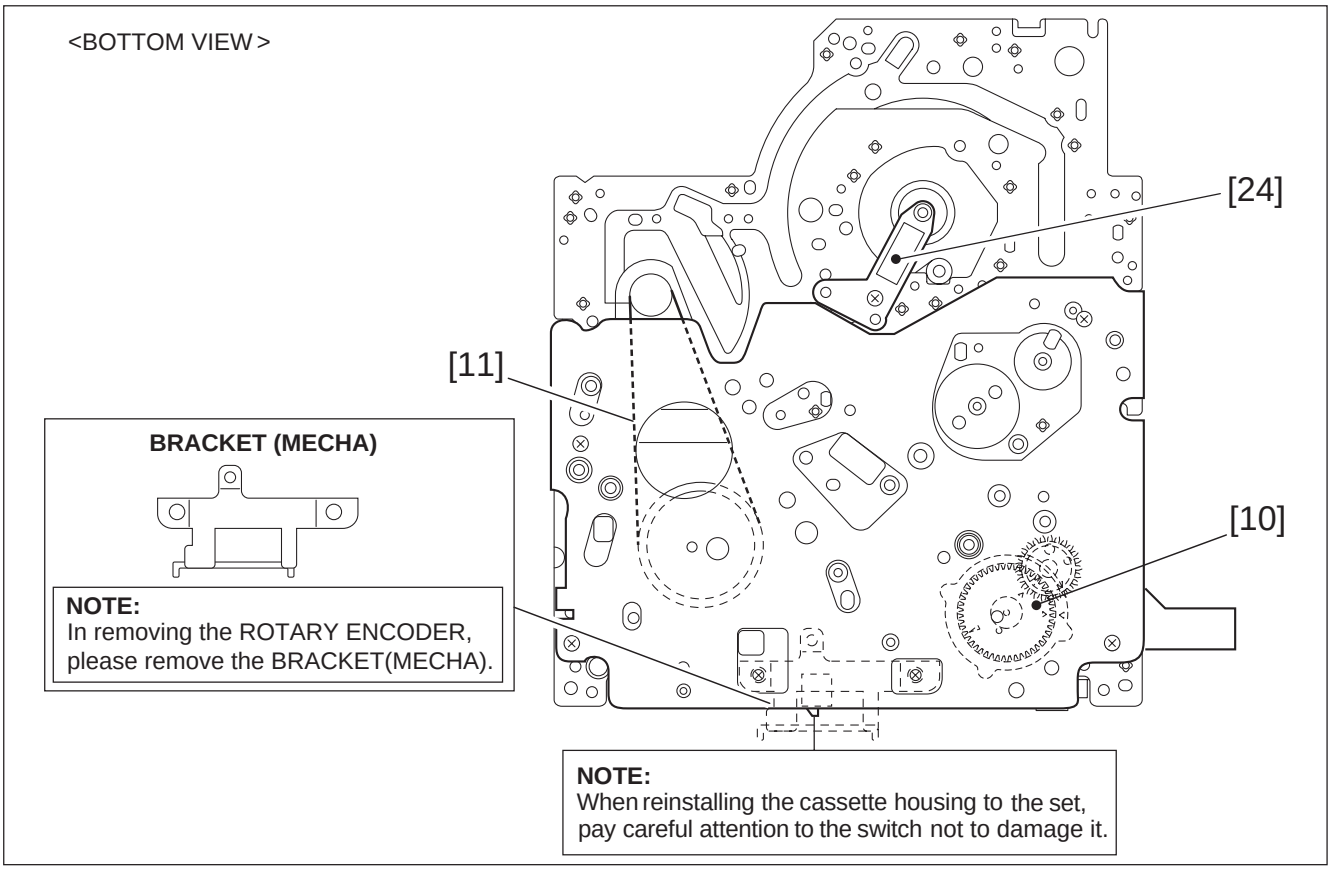

<BOTTOM VIEW>
[24]
[11]
[10]
BRACKET (MECHA)
NOTE:
In removing the ROTARY ENCODER, please remove the BRACKET(MECHA).
NOTE:
When reinstalling the cassette housing to the set, pay careful attention to the switch not to damage it.

Fig.2-2-4

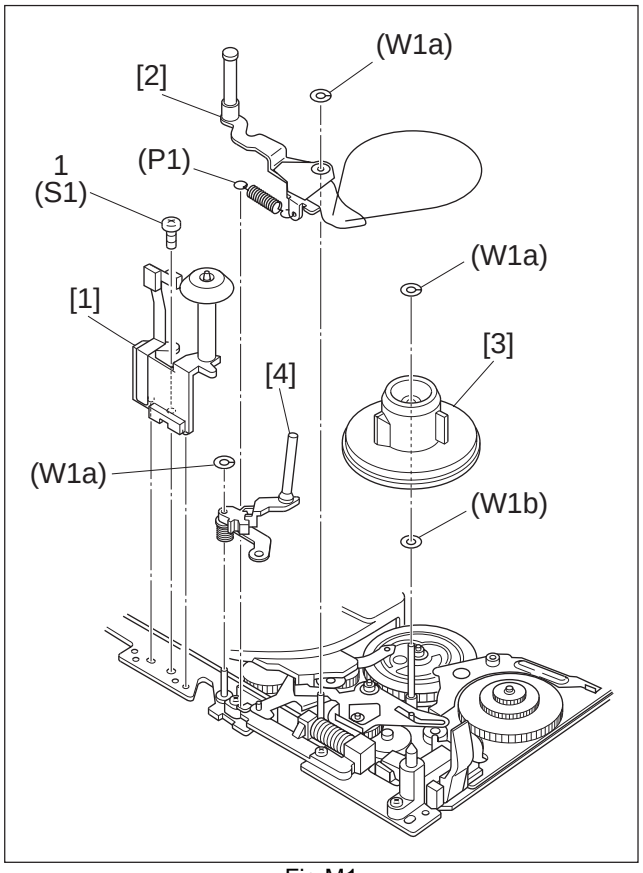


Fig.M1

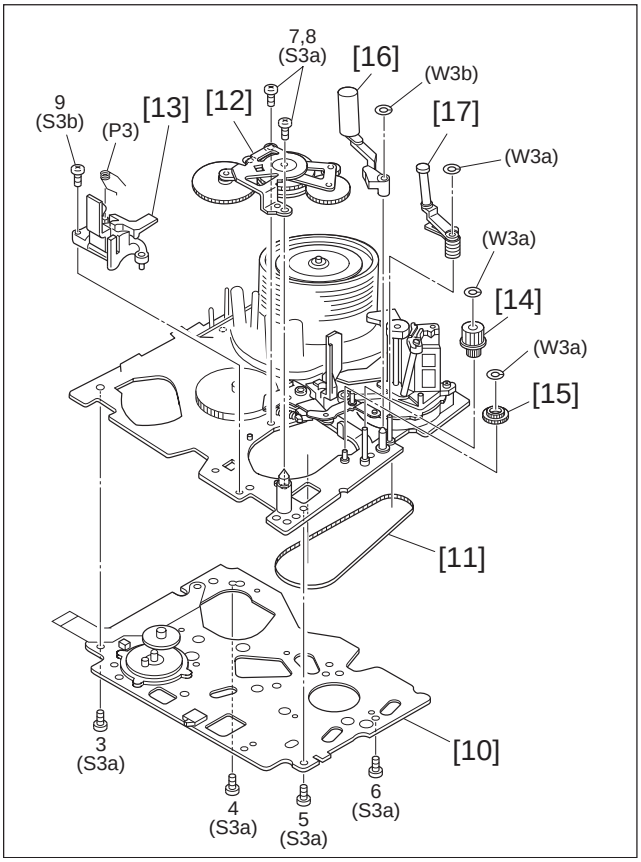


Fig.M3

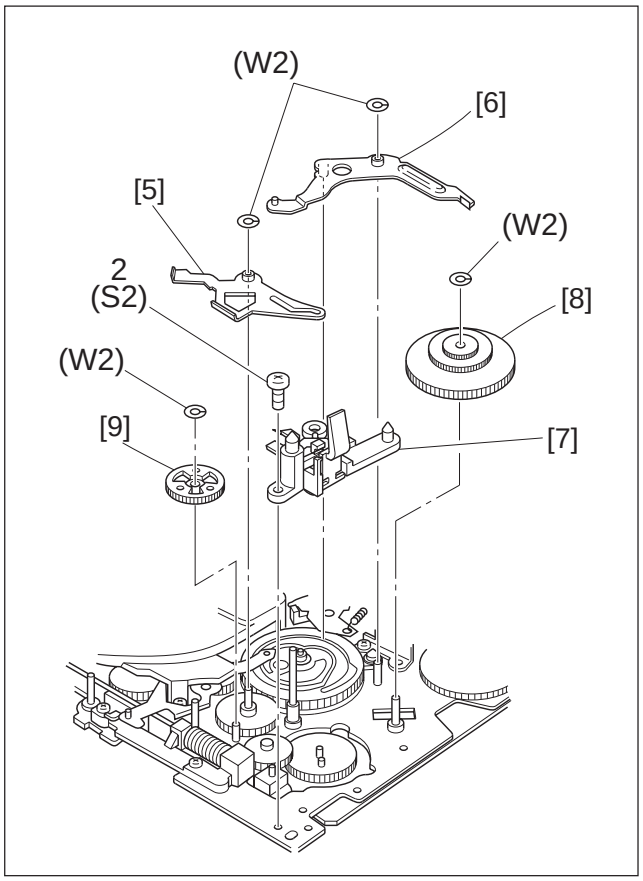


Fig.M2

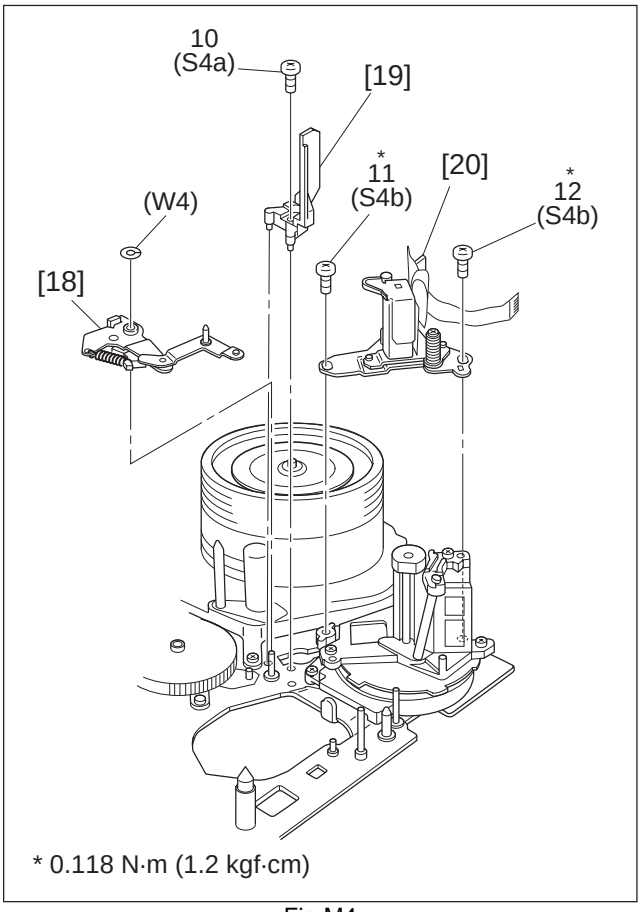


Fig.M4

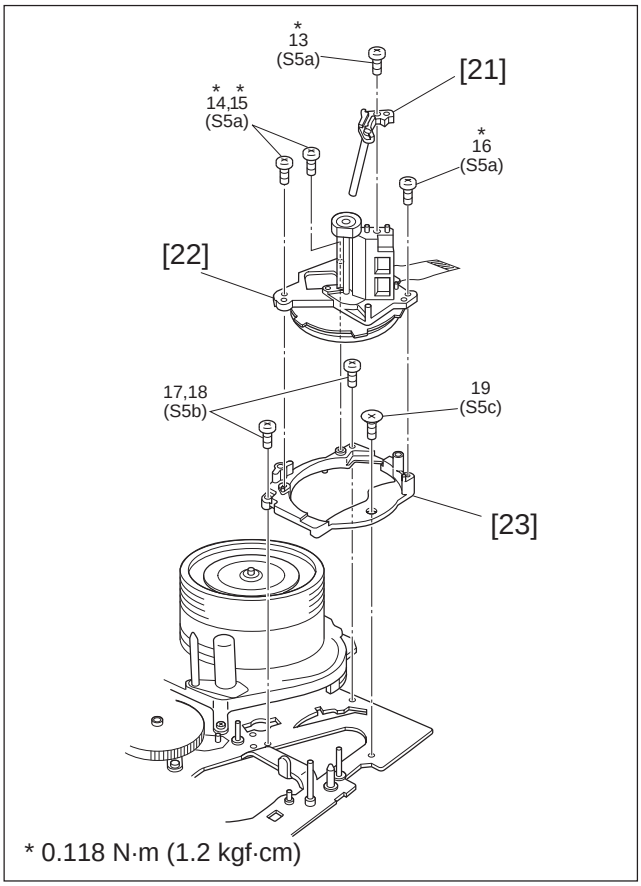


Fig.M5

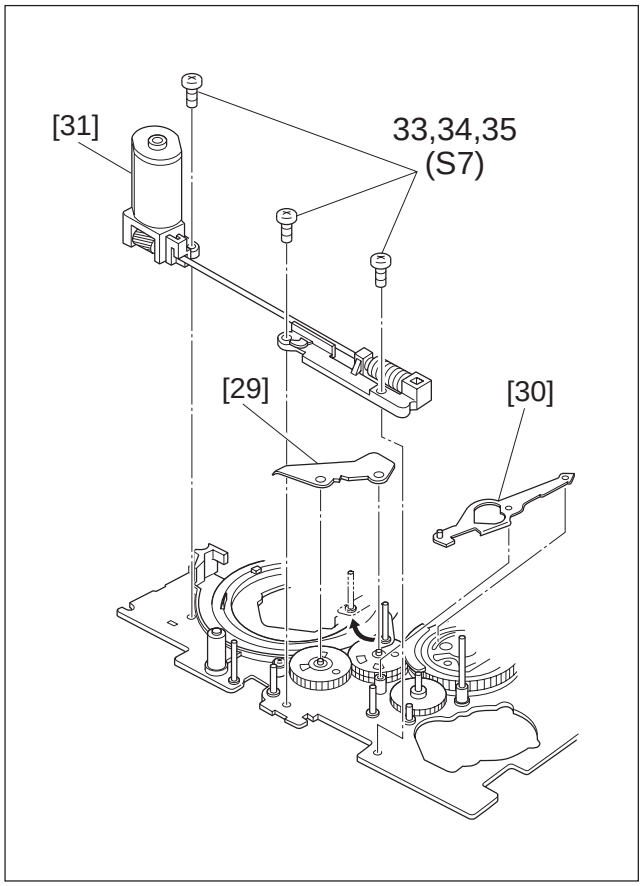


Fig.M7

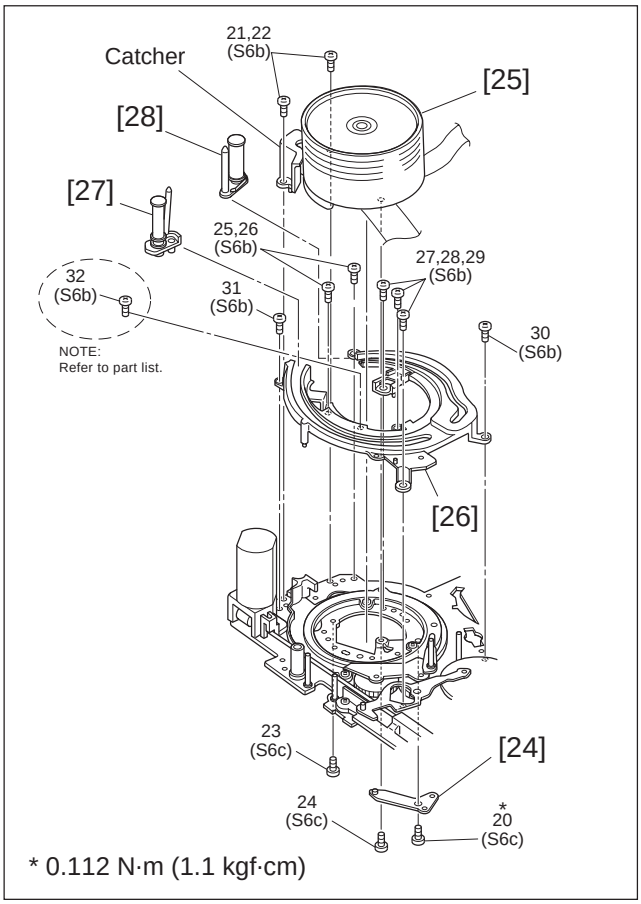


Fig.M6

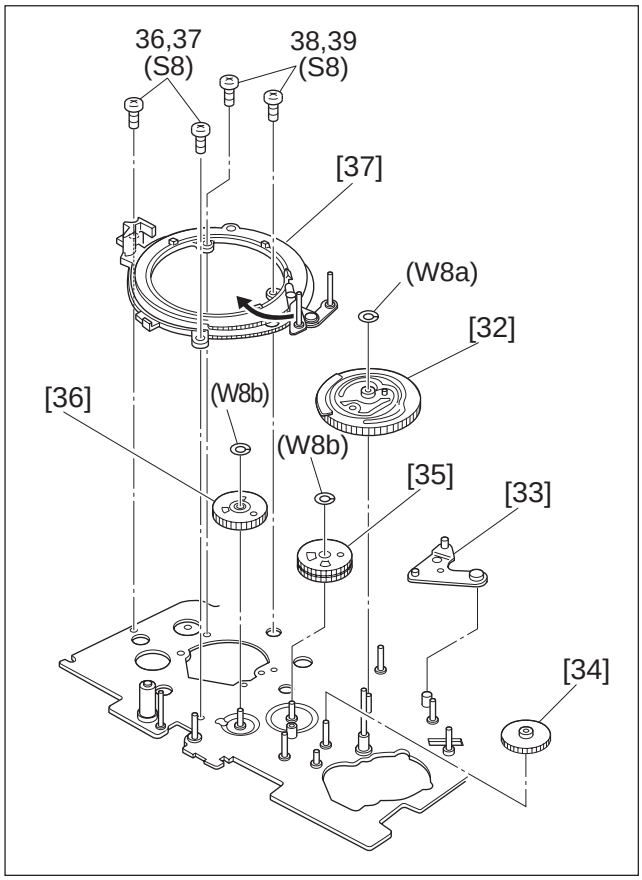


Fig.M8

2.2.4 CHECKUP AND ADJUSTMENT OF MECHANISM PHASE

NOTE:

Pay careful attention to the installing order and phase of mechanism parts of the loading system.

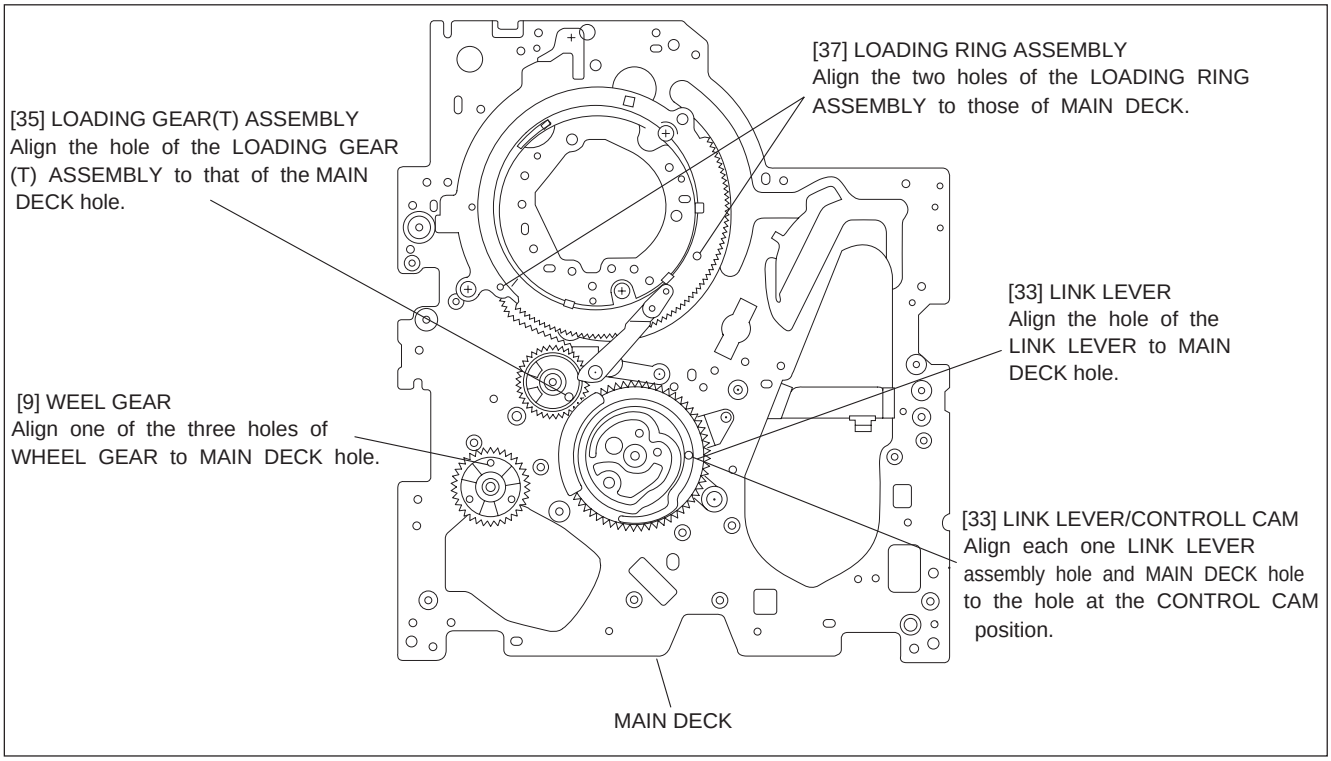

[37] LOADING RING ASSEMBLY
Align the two holes of the LOADING RING ASSEMBLY to those of MAIN DECK.
[35] LOADING GEAR(T) ASSEMBLY
Align the hole of the LOADING GEAR (T) ASSEMBLY to that of the MAIN DECK hole.
[33] LINK LEVER
Align the hole of the LINK LEVER to MAIN DECK hole.
[9] WEEL GEAR
Align one of the three holes of WHEEL GEAR to MAIN DECK hole.
[33] LINK LEVER/CONTROLL CAM
Align each one LINK LEVER assembly hole and MAIN DECK hole to the hole at the CONTROL CAM position.
MAIN DECK

Fig.2-2-5 Top of main deck

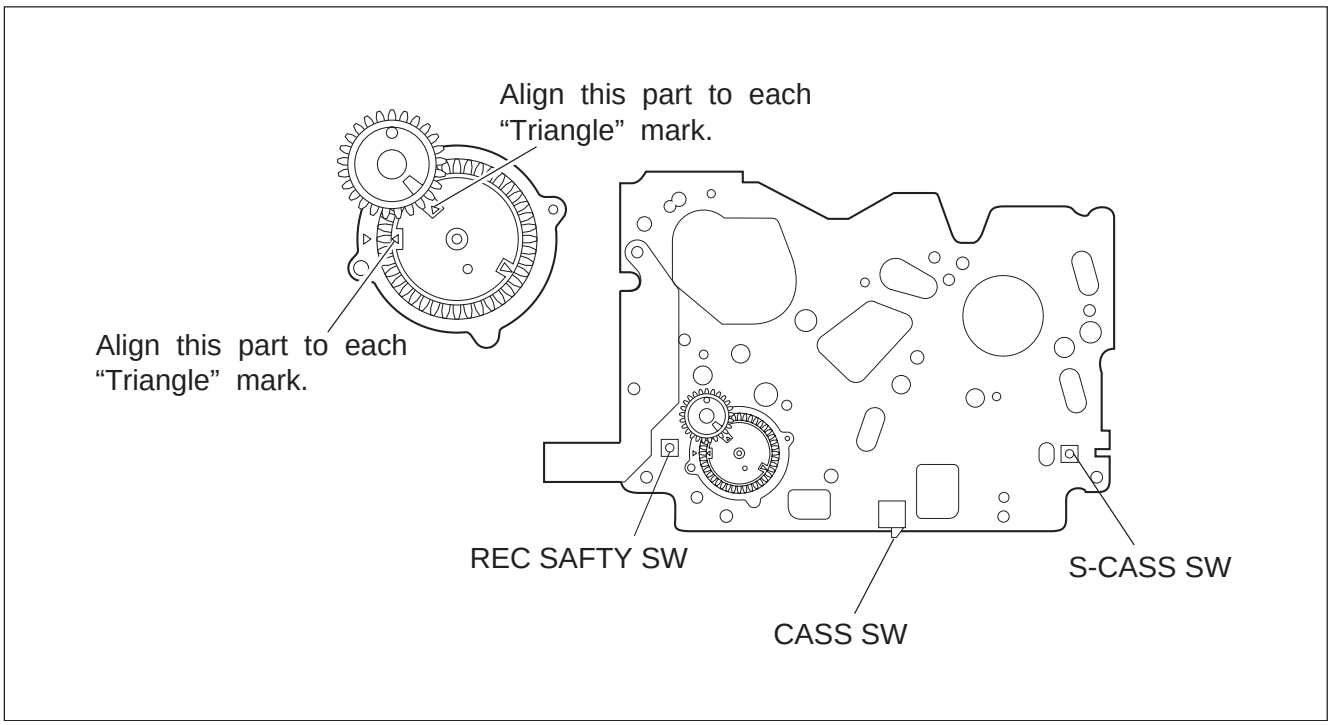


Fig.2-2-6 Rotary encoder

2.2.5 SERVISE NOTE

Use the following chart to manage screws.

Symbol No.	[1]	[7]	[10]				[12]		[13]	[19]	[20]		[21]	[22]			[23]		
Removing order of screw	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Place to stick screw																			
Reference drawing (Fig. No.)	M1	M2	M3							M4			M5						
Screw tightening torque	I										II						I		

Symbol No.	[24]	[25]			[26]							[31]			[37]		
Removing order of screw	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
Place to stick screw																				
Reference drawing (Fig. No.)	M6													M7			M8			
Screw tightening torque	III	I																		

<NOTE>

・Pay careful attention to tightening torque for each screw.
Torque setting value of torque driver is limited. At the values over the maximum torque setting value, fasten a screw manually not to damage the screw thread.

I : 0.216N・m(2.2kgf・cm)　　II : 0.118N・m(1.2kgf・cm)　　III : 0.112N・m(1.1kgf・cm)

Fig.2-2-7

2.2.6 REMARKS

2.2.6.1 Cleaning

(1) For cleaning of the upper drum (particularly video heads), use fine-woven cotton cloth with alcohol soaks through. Do not move the cloth but turn the upper drum counterclockwise.

NOTE:
Make sure not to move the cloth in the vertical direction to the video head, since it may cause damage of the video heads.

(2) For cleaning of parts of the tape transport system except the upper drum, use fine-woven cotton cloth or cotton swab soaked alcohol.

(3) After cleaning, confirm that the cleaned parts are completely dry before loading the deck with cassette tape.

2.2.6.2 Applying oil and grease

(1) Periodical oiling and greasing are not required but should be done to new parts when replacing. If oil and grease on the other parts of the other party are old and dirty, wipe them clean and apply new oil or grease.

(2) For parts and points to apply oil and grease, refer to the exploded view of the 3.2 VHS-C MECHANISM ASSEMBLY. Fig.2-2-8 specifies oil and grease to be used.

(3) When oiling, clean the objective parts with alcohol first and apply one or two drop(s) of oil. Too much oiling causes rotary parts to slip because of oil leakage.

Classification	Part No.	Symbol in drawing
Grease	KYODO-SH-JB	AA
Oil	YTU94027	BB

specifies oil and grease to be used

Fig.2-2-8

2.3 VHS MECHANISM

2.3.1 Notes

This model's mechanism relates closely to the rotary encoder and system control circuit (the rotary encoder is meshed with the control cam).
The system control circuit detects the mechanism condition using the rotary encoder's phase (internal switch phase). Therefore, the parts such as the rotary encoder, control plate, loading gear and control cam need to be installed correctly in order for the mechanism to operate properly. (For the mechanism phase adjustment, refer to the installation of each part.)

- Before using a soldering iron, be sure to disconnect the power plug from the AC outlet.
- Do not touch any of the adjustment points until a defect position is specified.
- When plugging or unplugging the connector, be sure not to damage the wire.
- Be sure the springs are hooked all the way around and in the correct direction.
- When performing repairs, take care not to damage a catch, etc.

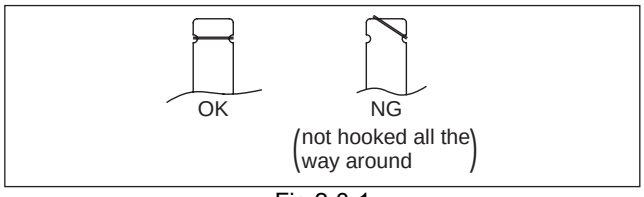


Fig.2-3-1

2.3.2 Mechanism operation check

When the mechanism is operated without a cassette loaded, operate the mechanism in the mechanism service mode.

2.3.3 Setting the mechanism assembling mode

The mechanism-assembling mode is provided with this mechanism. When disassembling and assembling, it is required to engage this mode.
Set the mode by adopting the following procedures.

(1) Remove the mechanism assembly using the disassembling procedure.
(2) Turn gear (a) of the loading motor manually to set the mechanism assembly to the eject end mode. Make sure that the main deck is connected to the guide hole (a) of the drive lever and the seal (a) of the main deck is connected to the mark "E" of the control plate. This condition is called the mechanism-assembling mode.

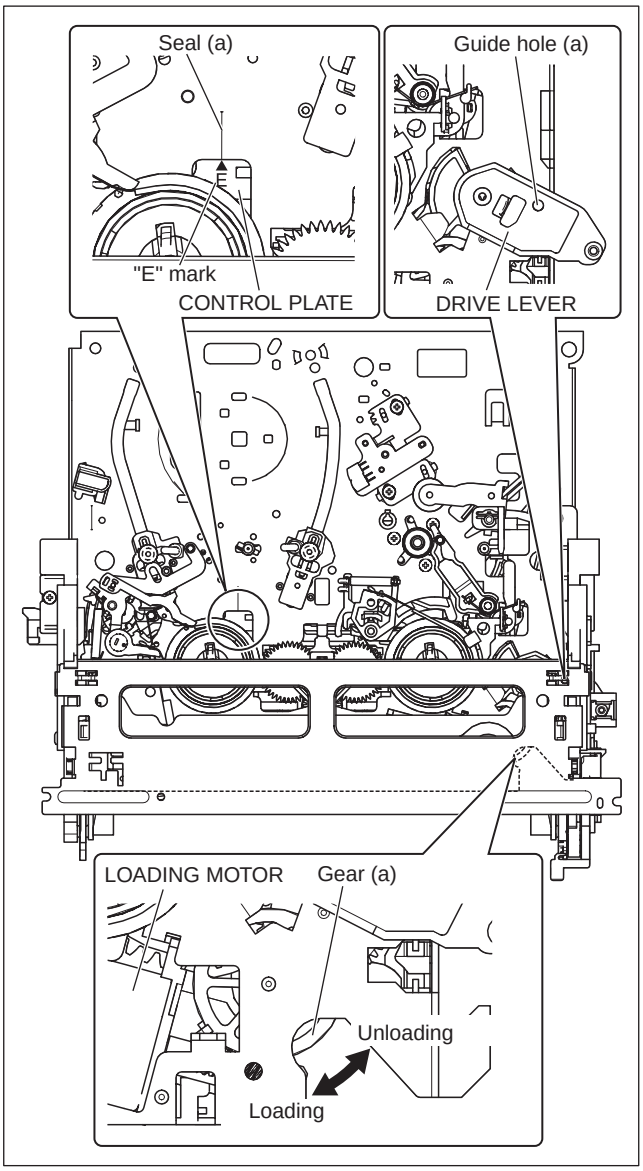


Fig.2-3-2

2.3.4 Layout of the main mechanism parts

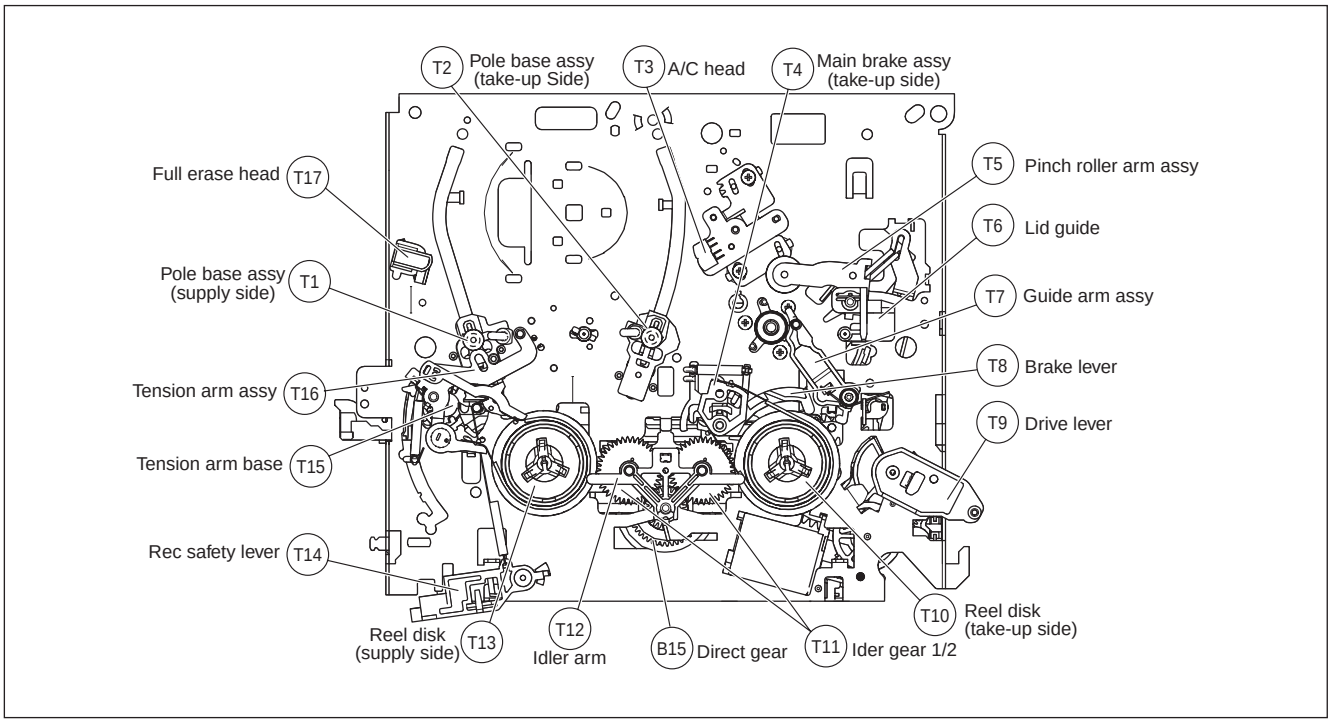

T2 Pole base assy (take-up Side)
T3 A/C head
T4 Main brake assy (take-up side)
Full erase head T17
T5 Pinch roller arm assy
T6 Lid guide
Pole base assy (supply side) T1
T7 Guide arm assy
T8 Brake lever
Tension arm assy T16
T9 Drive lever
Tension arm base T15
Rec safety lever T14
T10 Reel disk (take-up side)
Reel disk (supply side) T13
T12 Idler arm
B15 Direct gear
T11 Ider gear 1/2

Fig.2-3-3

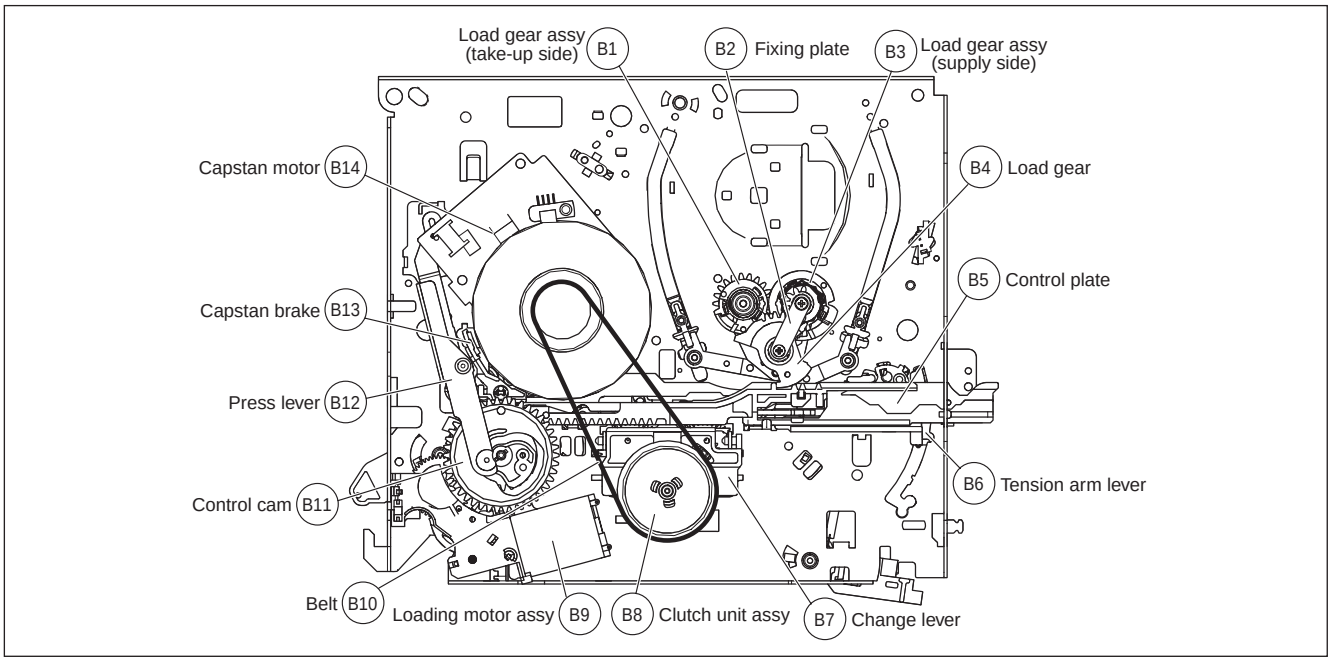


Fig.2-3-4

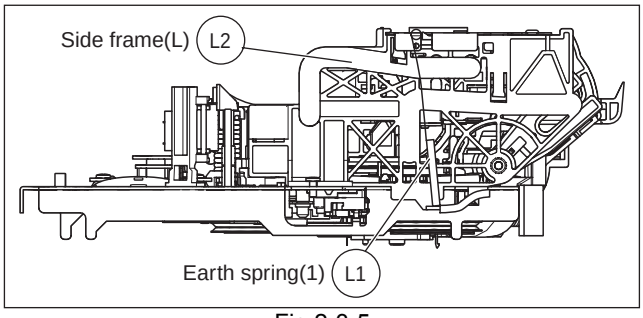


Fig.2-3-5

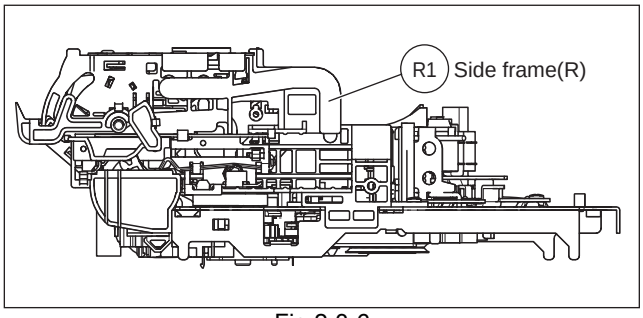


Fig.2-3-6

2.3.5 Disassembling procedure table

This table shows the order of parts removal when replacing each part. For replacement, remove the parts in the order of 1 to 13 shown in the table and install the parts in the reverse order.

The symbol number before each part name shows the number in the figure “Layout of the main mechanism parts”. T and B on the right of each part name show the side from which the part should be removed (T: From the front of the mechanism, B: From the rear of the mechanism, T/B: From both sides).

Symbols and numbers	Removal parts / (Reference items) Replacement parts	Front(T)/Back(B) of mechanism	Number of removal steps	Earth spring (1)	Top frame	Cassette holder	Side frame (L)	Drive arm	Side frame (R)	Lid guide	Idler arm	Idler gear 1/2	Main brake (T)	Reel disk (T)	Tension arm	Tension arm base	Press lever	Control cam	Capstan brake assy	Loading motor assy	Belt	Fixing plate	Load gear	Loading gear assy (S)	Loading gear assy (T)	Control plate	Clutch unit	Direct gear
L1	2.1 Earth spring (1)	T	1																									
-	2.1 Top frame	T	2	1																								
-	2.1 Cassette holder	T	3	1	2																							
L2	2.1 Side frame (L)	T	3	1	2																							
-	2.1 Drive arm	T	5	1	2	3	4																					
R1	2.1 Side frame (R)	T	3	1	2																							
T3	2.2 A/C head	T	1																									
T17	- FE head	T/B	1																									
T7	2.3 Guide arm assy	T	1																									
T6	2.3 Lid guide	T	1																									
T5	2.3 Pinch roller arm assy	T	2							1																		
T12	2.4 Idler arm	T	4	1	2	3																						
T11	2.4 Idler gear 1/2	T	5	1	2	3					4																	
T4	2.5 Main brake assy (T)	T	6	1	2	3					4	5																
T10	2.5 Reel disk (T)	T	7	1	2	3					4	5	6															
T16	2.5 Tension arm	T	6	1	2	3					4	5																
T13	2.5 Reel disk (S)	T	7	1	2	3					4	5			6													
T15	2.5 Tension arm base	T	7	1	2	3					4	5			6													
-	- T-up head	T	8	1	2	3					4	5			6	7												
-	- T-up lever	T	8	1	2	3					4	5			6	7												
T8	2.5 Brake lever	T	8	1	2	3					4	5	6	7														
T14	2.5 Rec safety lever	T	7	1	2	3	4	5	6																			
B12	2.6 Press lever	B	1																									
B11	2.6 Control cam	B	2														1											
B13	2.6 Capstan brake assy	B	3														1	2										
B9	2.6 Loading motor assy	B	4														1	2	3									
B10	2.7 Belt	B	1																									
B14	2.7 Capstan motor	T/B	2																		1							
-	- Wire holder	T/B	1																									
B2	2.7 Fixing plate	B	1																									
B4	2.7 Load gear	B	2																			1						
B3	2.7 Loading gear assy(S)	B	3																			1	2					
B1	2.7 Loading gear assy(T)	B	4																			1	2	3				
T1	- Pole base assy(S)	T/B	4																			1	2	3				
T2	- Pole base assy(T)	T/B	5																			1	2	3	4			
-	- Load gear base	B	5																			1	2	3	4			
B5	2.7 Control plate	B	6														1	2			3	4	5					
T9	- Drive lever	T/B	10	1	2	3	4	5	6								7	8		9								
B8	2.8 Clutch unit	B	2																		1							
B15	2.8 Direct gear	B	3																		1						2	
B7	- Change lever	T/B	6								1	2									3						4	5
B6	- Tension arm lever	T/B	14	1	2	3					4	5			6	7	8	9			10	11	12			13		

2.3.6 REPLACEMENT OF THE MAIN MECHANISM PARTS

2.3.6.1 Cassette holder

2.3.6.1.1 Removal

(1) Remove the screws (a) and (b).
(2) Hold up the top frame, cassette holder assembly, drive arm assembly and side frames (L/R) all together and remove them by releasing the hooks (a) and (b).

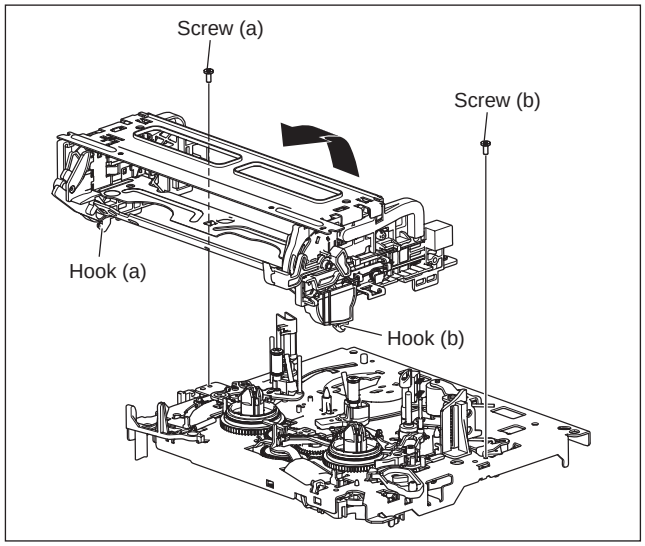


Fig.2-3-7

2.3.6.1.2 Installation (phase adjustment)

(1) Turn gear (a) of the loading motor assembly so that the main deck connects to the guide hole (a) of the drive lever.
(2) Hook the main deck to hooks (a) and (b).
(3) Place the projection of the drive lever to section (a) of the side frame (R) and install the cassette holder to the main deck. Make sure that the bosses of the side frame (L/R) connect with the holes (a) and (b) of the main deck.
(4) Secure screws (a) and (b).

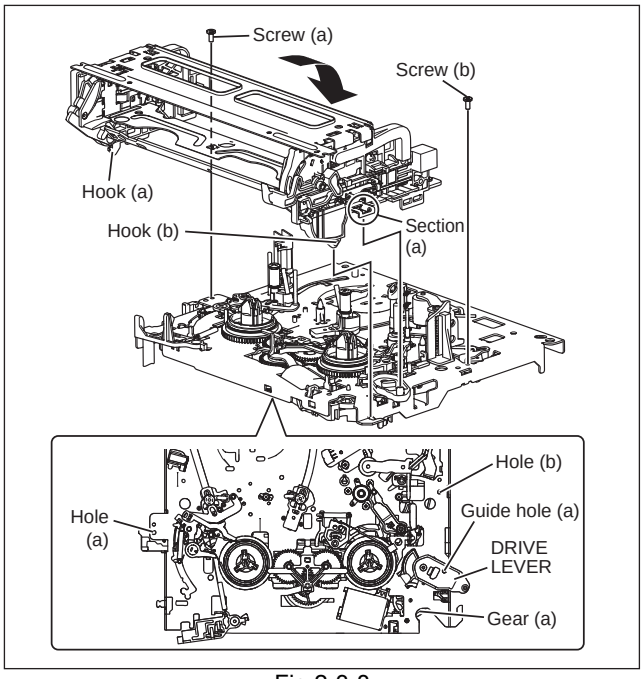


Fig.2-3-8

2.3.6.1.3 Disassembling

(1) Release hook (a) to remove the earth spring (1) from the top frame.
(2) Release the catches (a) and (b) and pull the top frame in the direction shown by the arrow (a) to remove it.
(3) Pull out the side frame (R).
(4) Pull out the cassette holder assembly and drive arm assembly from the side frame (L).

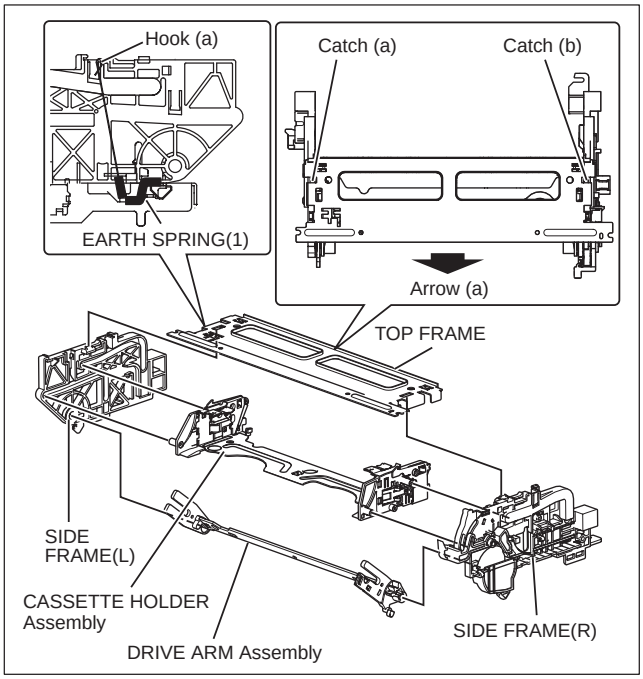


Fig.2-3-9

2.3.6.1.4 Assembling (installation and phase adjustment)

(1) Turn gear (a) of the loading motor assembly so that the main deck connects to the guide hole (a) of the drive lever.
(2) Place the projection of the drive lever on section (a) of the side frame (R) and install the side frame (R) to the main deck.
(3) Secure screw (b).
(4) Place section (b) of the drive arm on the gear of the side frame (R). Make sure that the pin of the door opener connects with section (c) of the drive arm.
(5) Place the drive arm on section (d) of the side frame (L) and install the side frame (L) on the main deck. Be sure to connect the earth spring (1) to the side frame (L).
(6) Secure screw (a).
(7) Turn gear (a) of the loading motor assembly until the drive arm is vertical.
(8) Place the slit of the side frame (L/R) at the foot of the cassette holder assembly and install the cassette holder.
(9) Place the top frame on the position guide (a) of the side frame (L/R) and push it in the direction shown by the arrow (a) for installation.
(10) Hook the earth spring (1) to the hook (a) of the top frame.

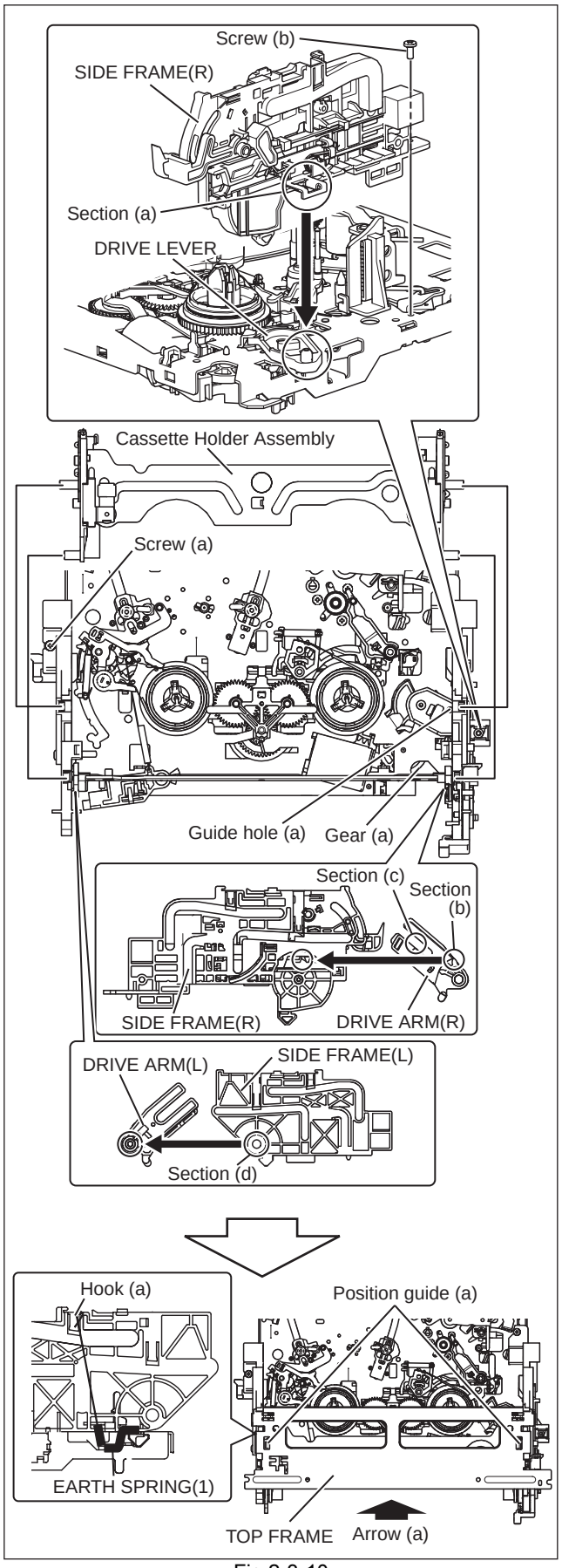


Fig.2-3-10

2.3.6.2 A/C head

2.3.6.2.1 Removal

(1) Remove screws (a) and (b).
(2) Remove the A/C head together with the head base.
(3) Remove the screws (c), (d) and (e) to remove the spring (a) and the A/C head from the Head base.

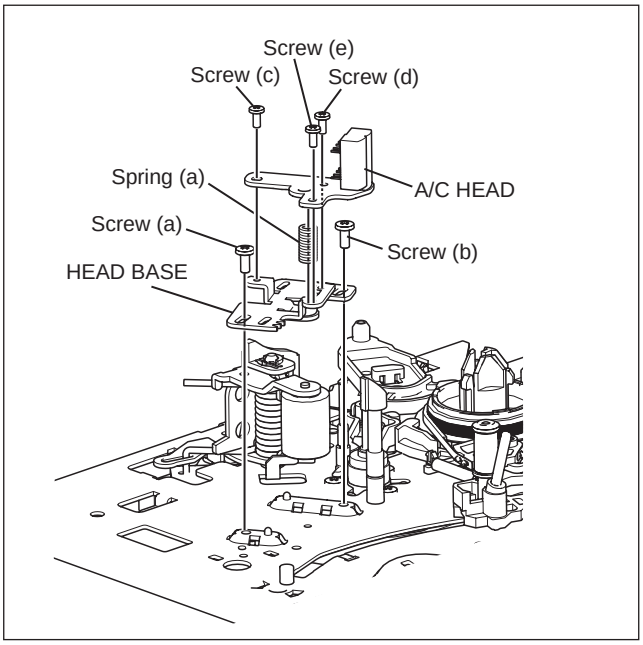


Fig.2-3-11

2.3.6.2.2 Installation (initial setting)

To install the A/C head to the head base, secure the screws in the order of (c), (d) and (e). To make the adjustment easy, temporarily elevate the A/C head.

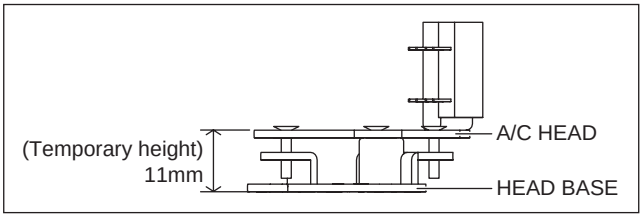


Fig.2-3-12

2.3.6.3 Guide arm, pinch roller arm

2.3.6.3.1 Removal

(1) Remove the spring (a) from the hook (a) and detach the guide arm assembly.
(2) Release the catch (a) to remove the lid guide.
(3) Remove the spring (b) from the hook (b) and detach the pinch roller arm assembly.

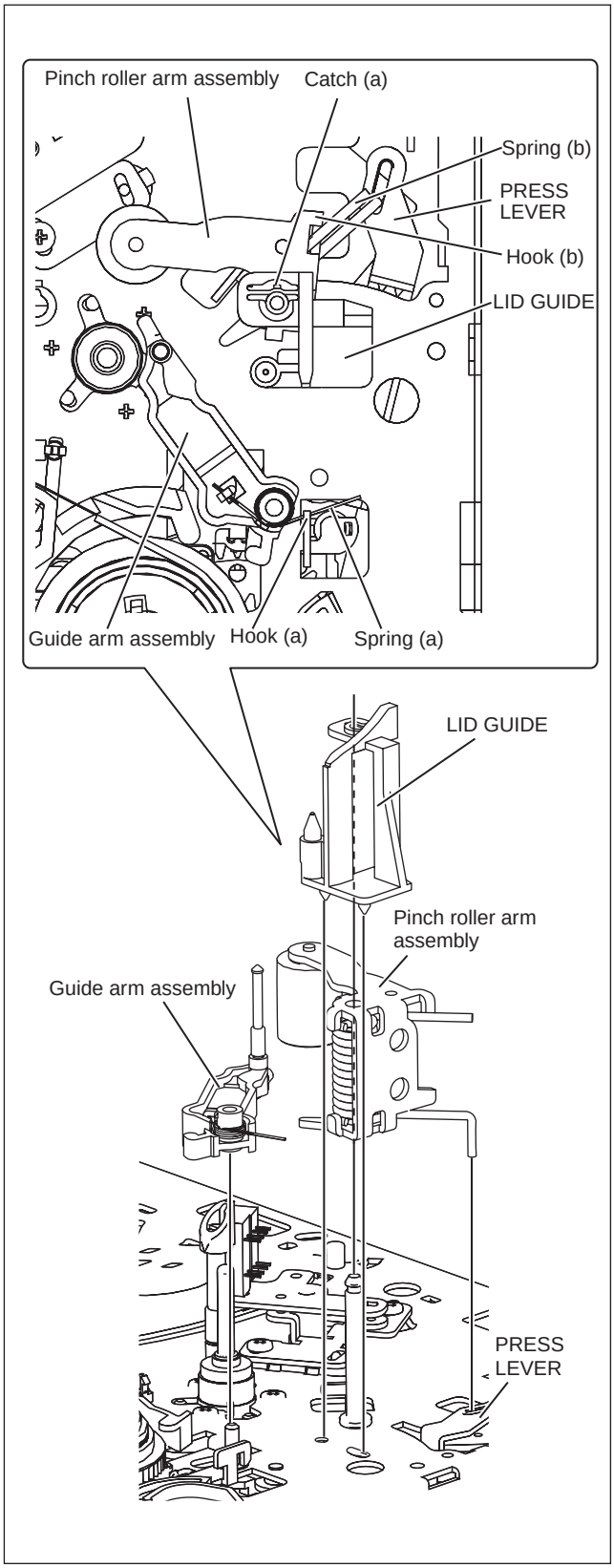


Fig.2-3-13

2.3.6.4 Idler arm, idler gear 1/2

2.3.6.4.1 Removal

(1) Release the catches (a) and (b) to detach the idler arm.
(2) Detach the idler gear 1/2.

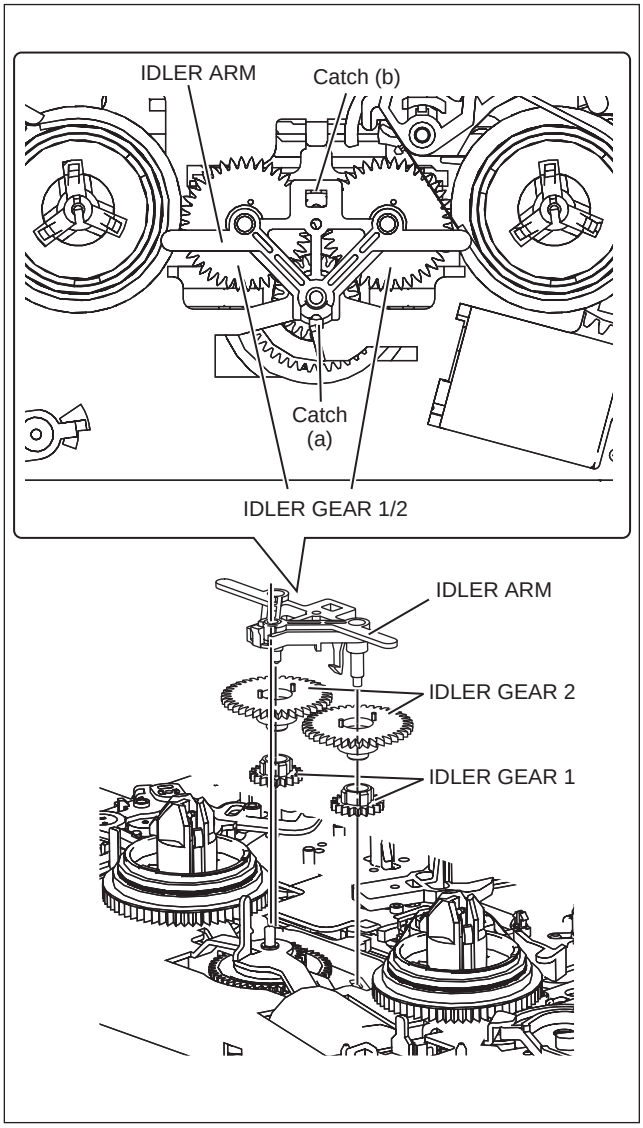


Fig.2-3-14

2.3.6.5 Main brake (T), brake lever, tension arm, reel disk (S/T), Rec safety lever

2.3.6.5.1 Removal

(1) Remove the spring (a). (Detach section (b) of the spring (a).)
(2) Release the catch (a) to detach the main brake (T).
(3) Release the catch (b) to detach the reel disk (T) and the spacer.
(4) Lift up and turn section (b) of the brake lever counterclockwise to remove the brake lever.
(5) Remove the spring (b) from the hook (a).
(6) Release the catch (c) to detach the tension arm.
(7) Release the catch (d) to detach the reel disk (S) and the spacer.
(8) Remove the spring (c) from the hook (b).
(9) Turn the tension arm base in the direction shown by arrow (a) to release catch (e). Place the projections of the tension arm base to the holes (a) to detach the tension arm base.
(10) While releasing the catch (f), turn the Rec safety lever counterclockwise to remove it.

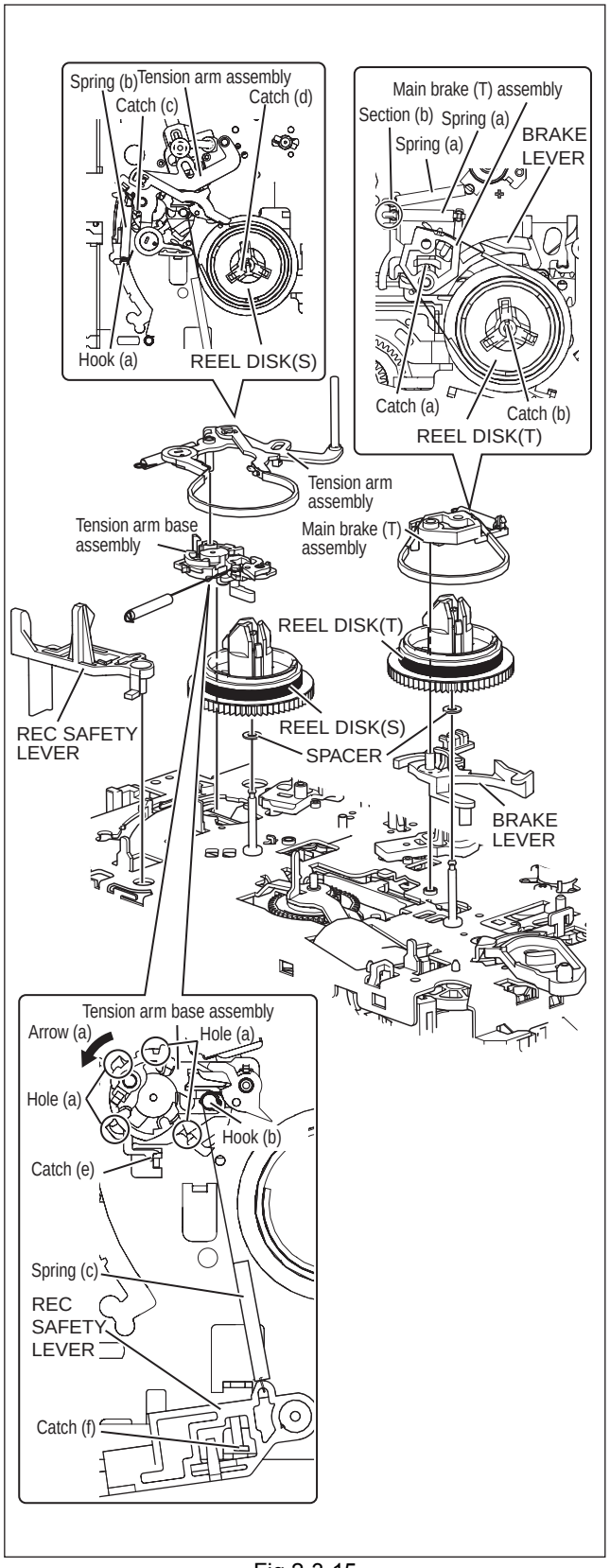


Fig.2-3-15

2.3.6.6 Press lever, control cam, capstan brake assembly, loading motor assembly

2.3.6.6.1 Removal

(1) Remove the slit washer (a) to detach the press lever.
(2) Release the slit washer (b) to detach the control cam.
(3) Release the catch (b) to detach the capstan brake assembly.
(4) Remove the solder (a).
(5) Remove the screw (a).
(6) Release the catches (c) and (d) to detach the loading motor assembly.

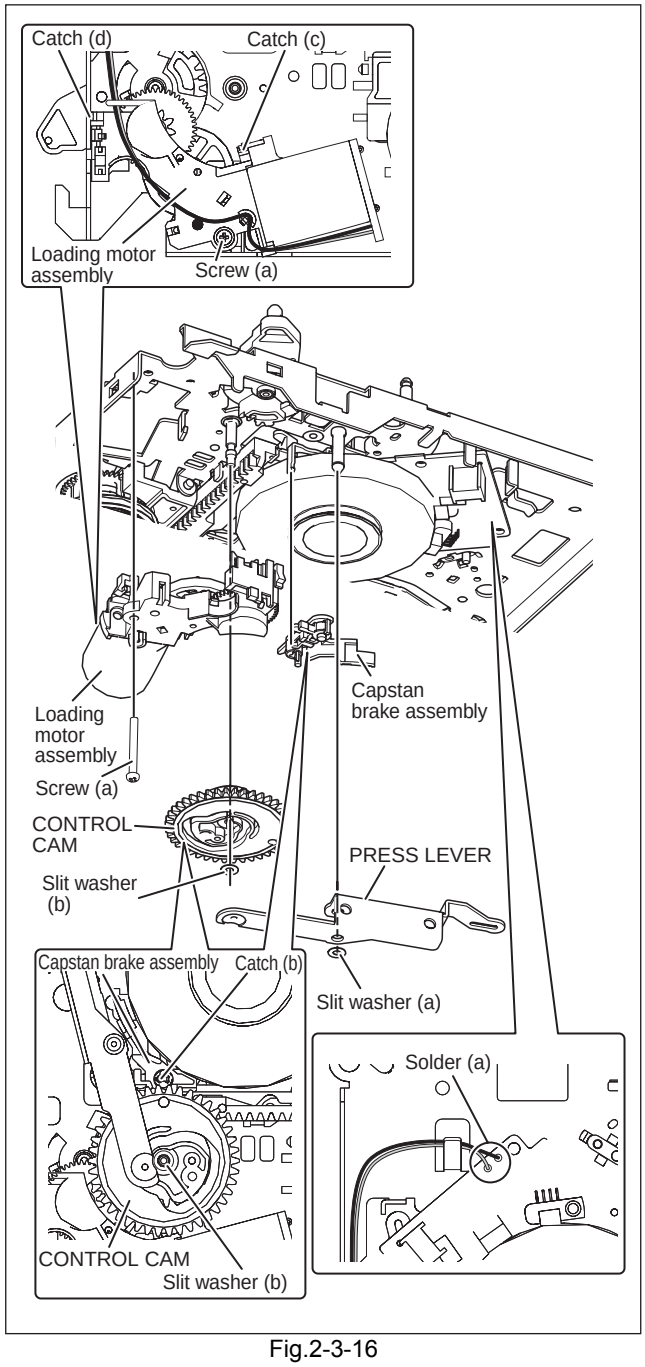


Fig.2-3-16

2.3.6.6.2 Installation (phase adjustment)

(1) Attach the loading motor assembly to the main deck.
(2) Secure the screw (a).
(3) Solder the wire to section (a).
(4) Arrange the wire along with the position guide (b).
(5) Attach the capstan brake assembly to the main deck.
(6) Place the main deck on the guide hole (a) of the control plate.
(7) Place the main deck on the guide hole (b) of the drive lever.
(8) Place the main deck no guide hole (c) of the control cam to install the control cam.
(9) Move the capstan brake in the direction shown by the arrow (a) to attach the press lever to the shaft (a). Make sure that the boss of the press lever fits in the control cam, and that the shaft (b) of the pinch roller arm assembly connects with the hole of the press lever.
(10) Attach slit washer (a) to shaft (a).

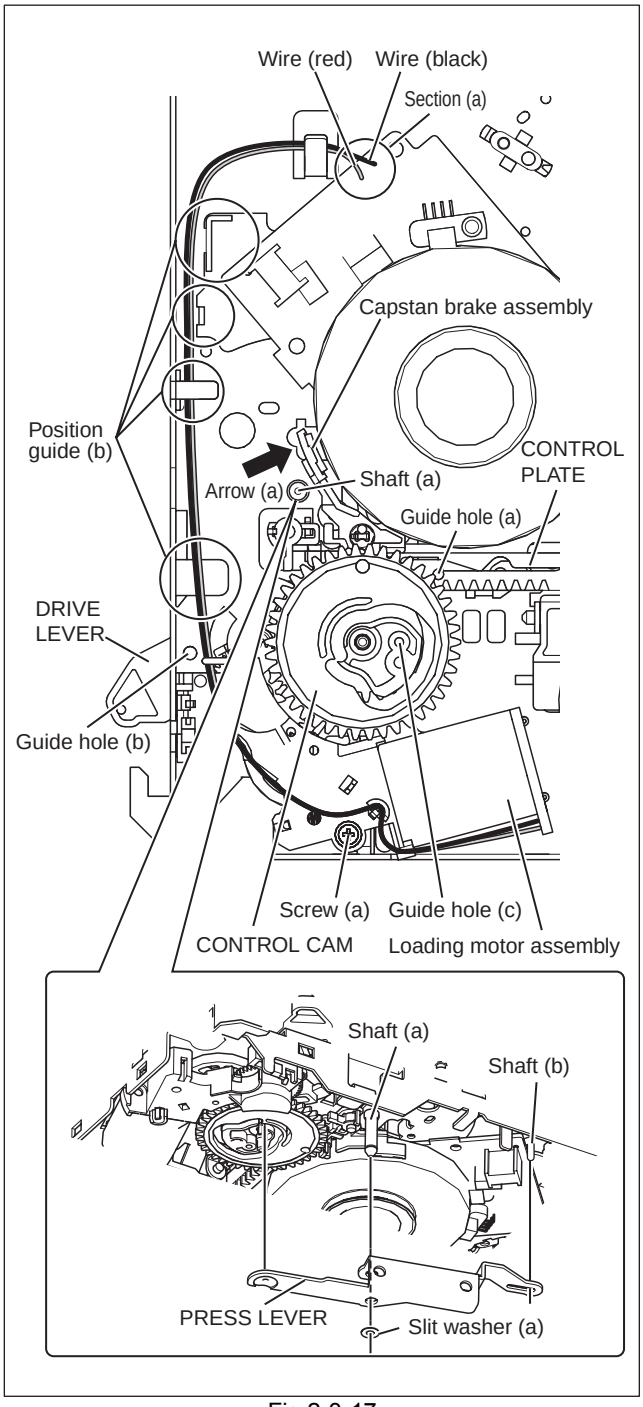


Fig.2-3-17

Note:

- When replacing the worm bearing of the loading motor assembly, attach it according to the following specification.
  If worm bearing is not attached correctly, a mechanism noise may occur. (See Fig. 2-3-18)

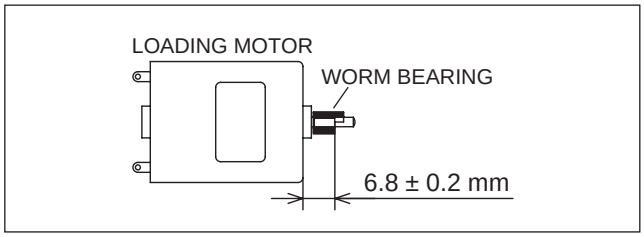


Fig.2-3-18

2.3.6.7 Capstan motor, load gear, control plate

2.3.6.7.1 Removal

(1) Detach the belt.
(2) Check that the FFC connector on the drum is disconnected.
(3) Release the catch (a) to remove the FFC wire.
(4) Remove the screws (a) to detach the capstan motor.
(5) Remove the screws (b) to detach the fixing plate.
(6) Release the catch (b) to detach the load gear.
(7) Turn the load gear (S/T) in the loading direction to detach it.
(8) Remove the control plate.

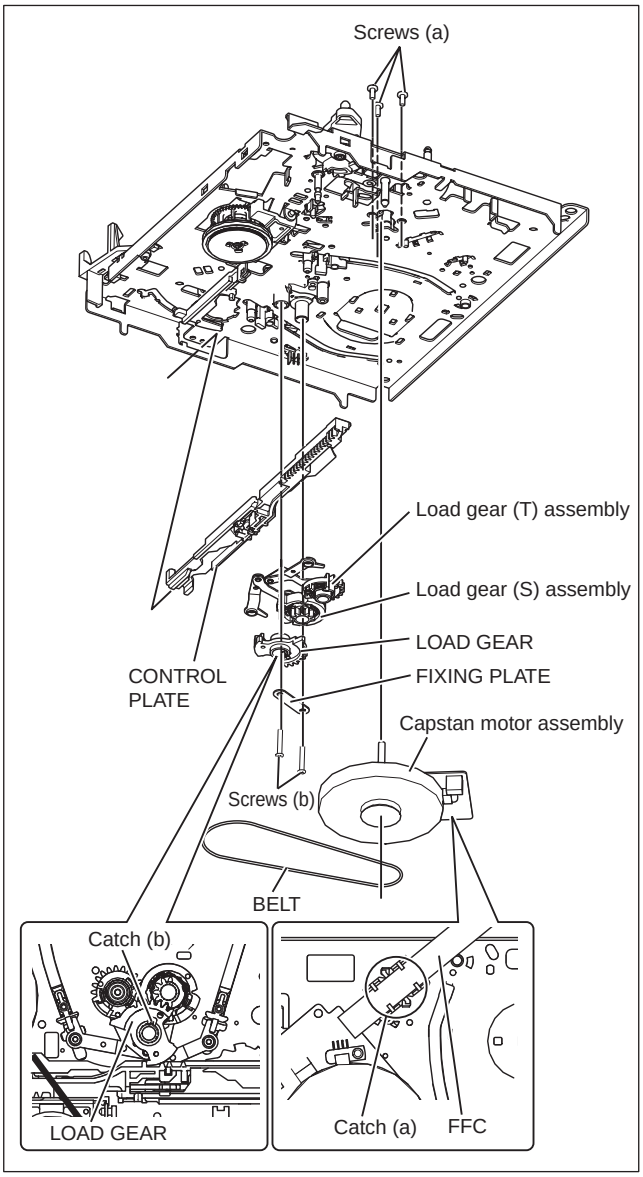


Fig.2-3-19

2.3.6.7.2 Installation (phase adjustment)

(1) Place the main deck on the guide hole (a) of the tension arm lever.
(2) Place the main deck on the guide hole (b) of the brake lever.
(3) Attach the control plate to align with the position guide (a).
(4) Place the hole (c) of the load arm (T) on the pole base (T) and the load gear (T) on the load gear base.
(5) Place the hole (d) of the load arm (S) on the pole base (S) and the load gear (S) on the load gear base. Be sure to align the guide mark (e) of the load gear (T) to that of the load gear (S).
(6) Turn the load gear (S/T) in the unloading direction to place the main deck on the guide hole (f) of the load gear (T).
(7) Place the main deck on the guide hole (g) of the control plate.
(8) Attach the load gear on the load gear base so that the control plate is placed on the edge (h) of the load gear.
(9) Place the fixing plate on the shaft of the load gear base and secure the screws (b).

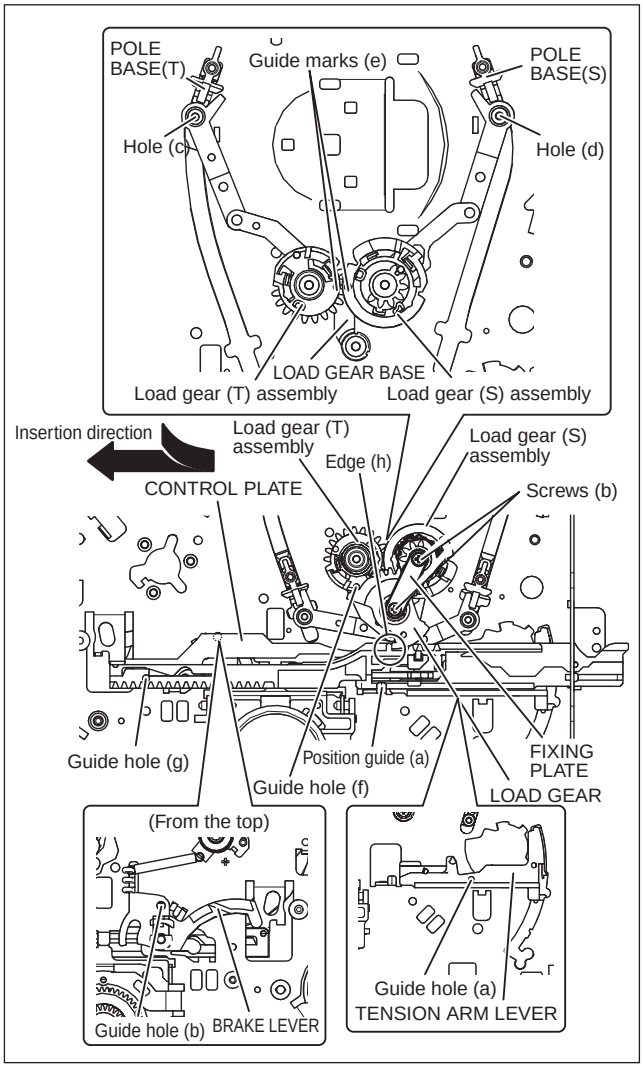


Fig.2-3-20

2.3.6.8 Clutch unit assembly, direct gear

2.3.6.8.1 Removal

(1) Remove the slit washer (a) to detach the clutch unit assembly.
(2) Remove the spring (a) and the direct gear.

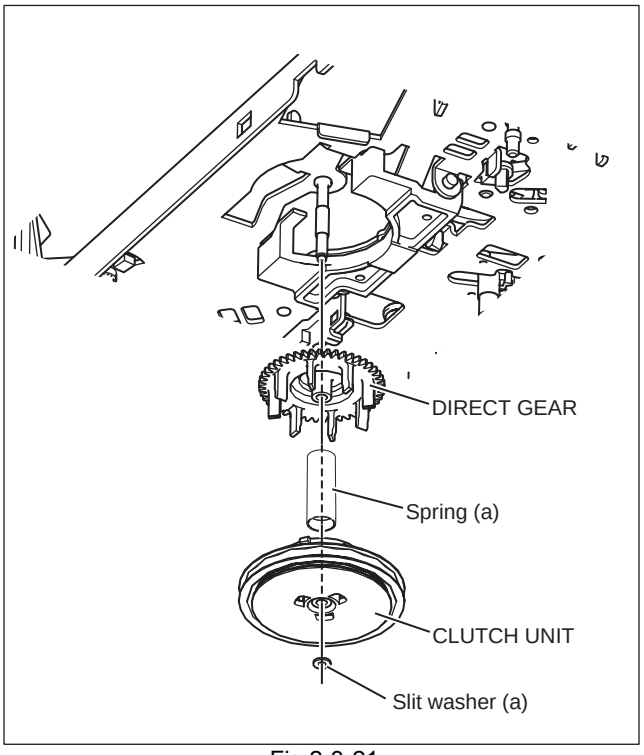
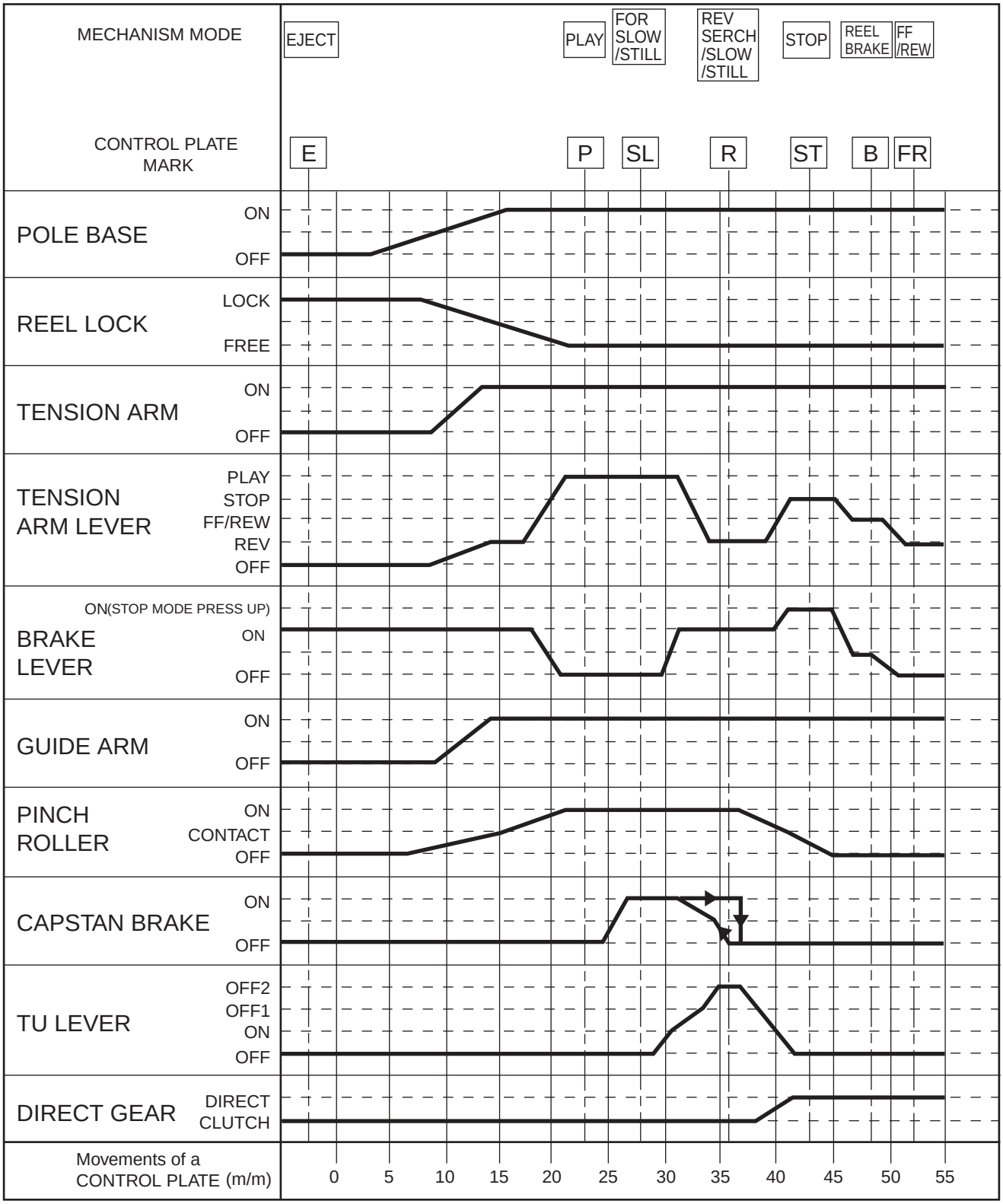


Fig.2-3-21

2.3.7 MECHANISM TIMING CHART



2.3.8 REMARKS

2.3.8.1 Cleaning

(1) For cleaning of the upper drum (particularly video heads), use fine-woven cotton cloth with alcohol soaks through. Do not move the cloth but turn the upper drum counterclockwise.

NOTE:
Make sure not to move the cloth in the vertical direction to the video head, since it may cause damage of the video heads.

(2) For cleaning of parts of the tape transport system except the upper drum, use fine-woven cotton cloth or cotton swab soaked alcohol.

(3) After cleaning, confirm that the cleaned parts are completely dry before loading the deck with cassette tape.

2.3.8.2 Applying oil and grease

(1) Periodical oiling and greasing are not required but should be done to new parts when replacing. If oil and grease on the other parts of the other party are old and dirty, wipe them clean and apply new oil or grease.

(2) For parts and points to apply oil and grease, refer to the exploded view of the 3.3 VHS MECHANISM ASSEMBLY. Fig.2-3-22 specifies oil and grease to be used.

(3) When oiling, clean the objective parts with alcohol first and apply one or two drop(s) of oil. Too much oiling causes rotary parts to slip because of oil leakage.

Classification	Part No.	Symbol in drawing
Grease	KYODO-SH-JB	AA
Oil	COSMO-HV56	BB

specifies oil and grease to be used

Fig.2-3-22

JVC

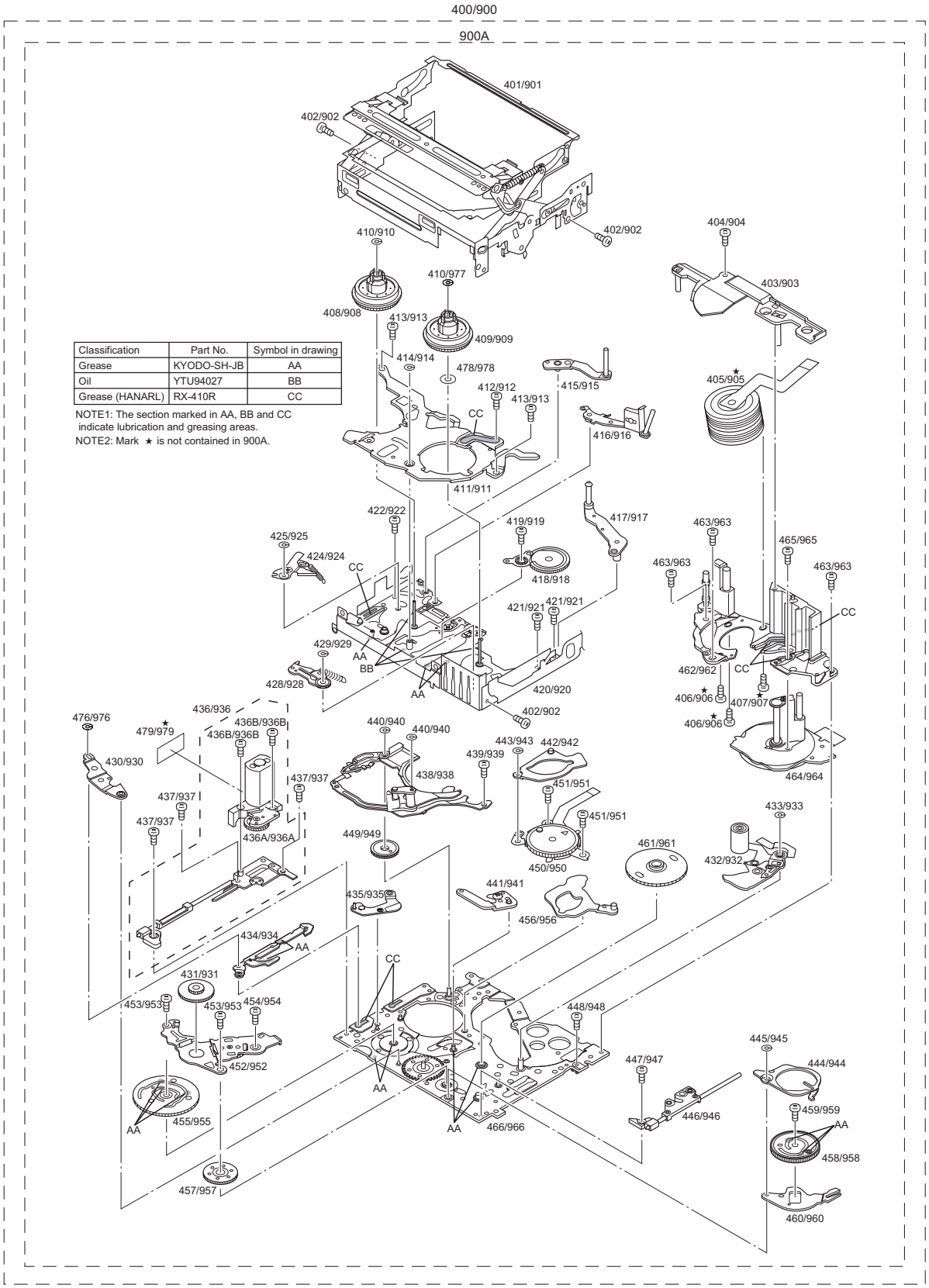
VICTOR COMPANY OF JAPAN, LIMITED
AV & MULTIMEDIA COMPANY CAMCORDER CATEGORY 12, 3-chome, Moriya-cho, kanagawa-ku, Yokohama, kanagawa-prefecture, 221-8528, Japan

(No.86700)

Printed in Japan
200304WPC

SECTION 3
PARTS LIST

3.1 DVC MECHANISM ASSEMBLY



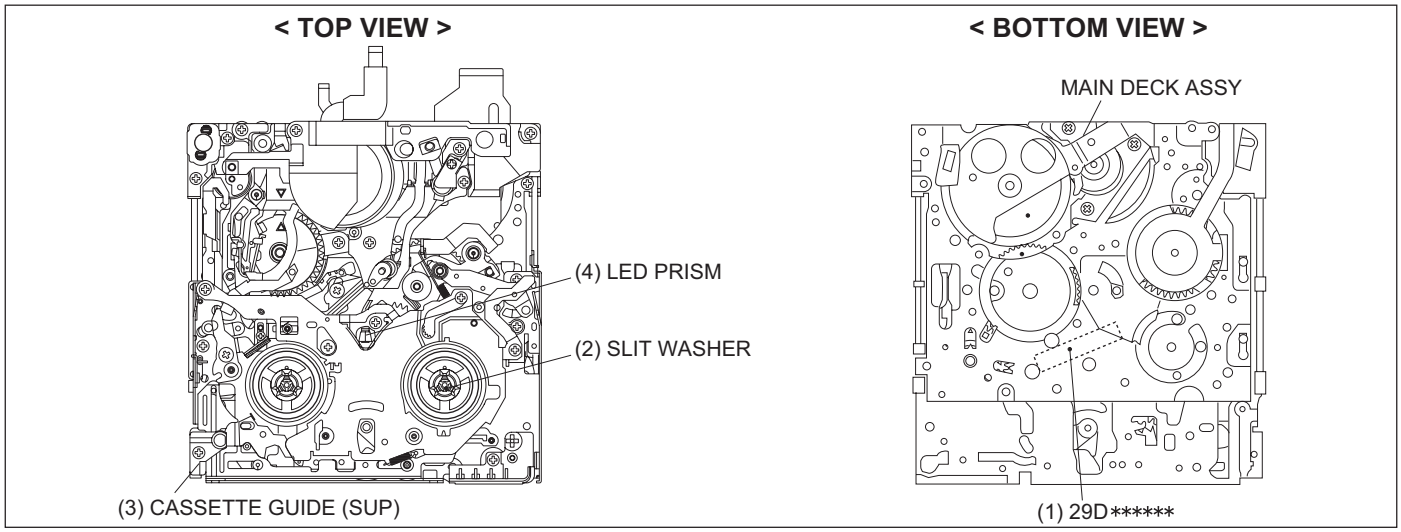
Classification	Part No.	Symbol in drawing
Grease	KYODO-SH-JB	AA
Oil	YTU94027	BB
Grease (HANARL)	RX-410R	CC

NOTE1: The section marked in AA, BB and CC indicate lubrication and greasing areas.
NOTE2: Mark ★ is not contained in 900A.

Fig.3-1-1

3.1.1 DVC MECHANISM ASSEMBLY PART LIST

- Since parts numbers described here are the numbers at the time of manualissue, they are subject to change without notice. Therefore, be sure to see a parts list in the service manual of each model as for parts numbers.
- To distinguish the mechanism assembly with the symbol number of 400-499 from the mechanism assembly with the symbol number of 900-999, see the following procedures.
  (1) See the numbers on the backside of the MAIN DECK ASSY.
  For example, "29D******" is printed on the backside of the mechanism assembly with the symbol number of 900-999 (YMA0029D in this example). See the first three characters and numbers from the left.
  (2) See the color of the SLIT WASHER on the REEL DISK (TU).
  A red slit washer is used (the same color as a slit washer of CASSETTE GUIDE (SUP)) in the mechanism assembly with the symbol number of 400-499. A black slit washer is used in the mechanism assembly with the symbol number of 900-999.
  However, the black slit washer may be changed into a red one for the purpose of parts unification.
  (3) See the color of the CASSETTE GUIDE(SUP).
  Light-brown CASSETTE GUIDE(SUP) is used in the mechanism assembly with the symbol number of 400-499.
  Black CASSETTE GUIDE(SUP) is used in the mechanism assembly with the symbol number of 900-999.
  (4) See the shape of the LED PRISM. LED PRISM consists of only resin in the mechanism assembly with the symbol number of 400-499.
  Upper part of the LED PRISM is covered with black metal in the mechanism assembly with the symbol number of 900-999.



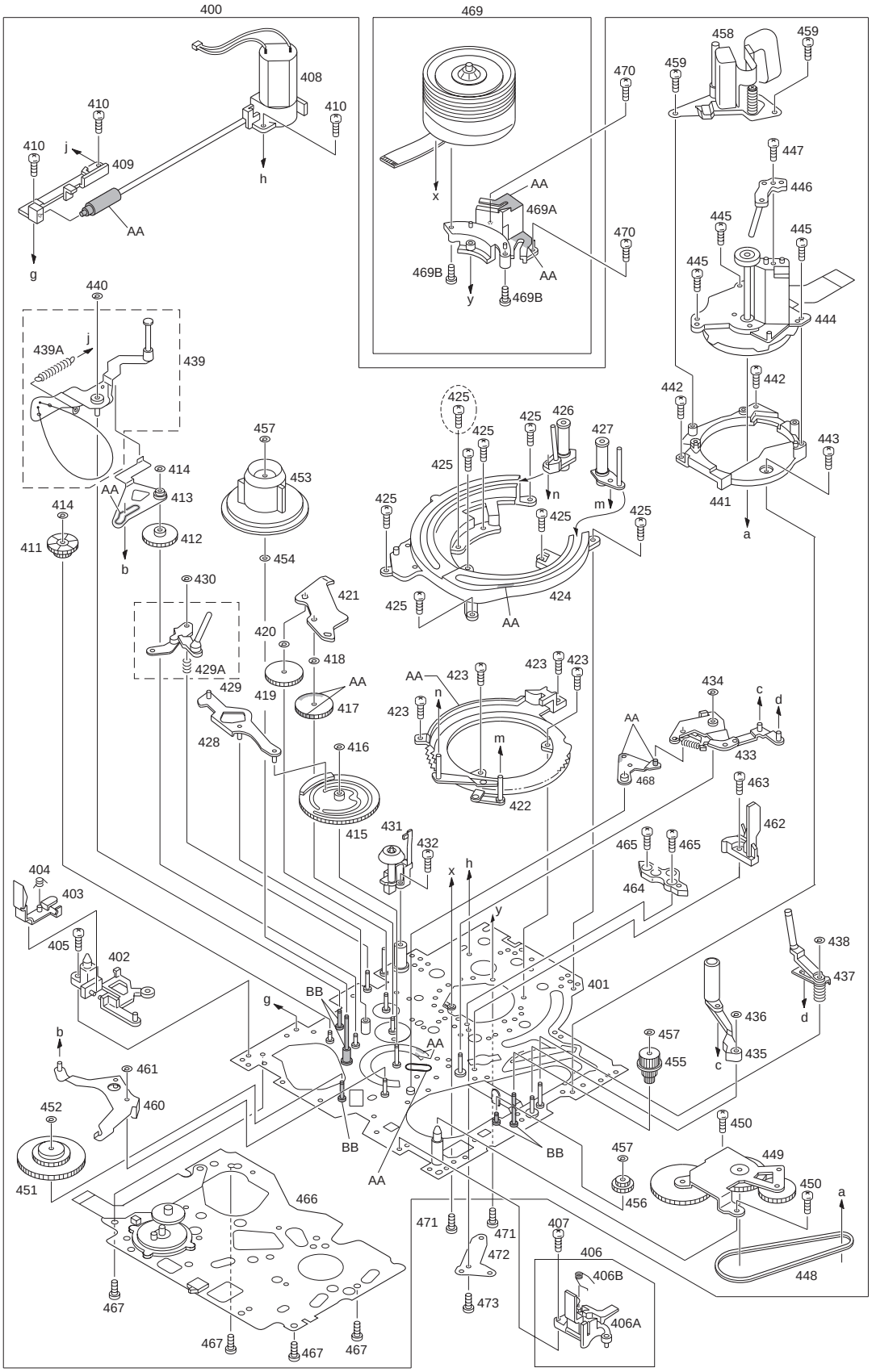
Part Name	Symbol No.	Part No.	Part No.	Part No.	Symbol No.	Part No.	Patr No.
MECHA(A) ASSY	400	YMA0029C	YMA0029M	YMA0029L	900	YMA0029H	YMA0029E
MECHA(A)ASSY	-	-	-	-	900A	YMA0029D	-
CASSETTE HOUSING ASSY	401	LY31543-002E*	LY31543-002H	←	901	LY32870-001G*	LY32870-001J
MINI SCREW,X3	402	YQ43893-8	←	←	902	←	←
UPPER BASE ASSY	403	LY31542-001J	←	←	903	LYH30420-001A	←
MINI SCREW	404	YQ43893*	QYSPSPU1425M	←	904	←	←
DRUM ASSY	405	**	**	**	905	**	**
DAMP.SCREW ASSY,X2	406	LY42820-001A	←	←	906	←	←
DAMP.SCREW ASSY	407	LY42820-002A	←	←	907	←	←
REEL DISK ASSY (SUP)	408	LY31538-001B*	LY31538-001F	←	908	←	←
REEL DISK ASSY (TU)	409	LY31538-002B*	LY31538-002H	LY31538-002G	909	LY31538-002H	←
SLIT WASHER,X2 or X1	410	YQ44246,(x2)	←,(x2)	←,(x2)	910	←*,(x1)	←,(x2)
REEL COVER ASSY	411	LY10217-001A*	LY10217-001F	←	911	LY10372-001D	←
MINI SCREW	412	LY42120-001A*	LY42120-002A	←	912	←	←
MINI SCREW,X2	413	LY41945-003A	←	←	913	←	←
SLIT WASHER	414	YQ44246	←	←	914	←	←
TENSION ARM ASSY	415	LY42025-001C	←	←	915	LY43725-001D	←
SLANT POLE ARM ASSY	416	LY31535-001F	←	←	916	LYH40269-001A	←
TU ARM ASSY	417	LY42031-001G*	LY42031-001K	←	917	LY43731-001F	←
SWING ARM ASSY	418	LY31531-001D	←	←	918	←	←
MINI SCREW	419	YQ43893	←	←	919	←	←
SLIDE DECK FINAL ASSY	420	LY20530-003B*	LY20530-003E	←	920	LYH30424-001A	←

Part Name	Symbol No.	Part No.	Part No.	Part No.	Symbol No.	Part No.	Patr No.
MINI SCREW,X2	421	YQ43893	←	←	921	←	←
MINI SCREW	422	LY43023-001A	←	←	922	←	←
PAD ARM ASSY	424	LY31533-001E	←	←	924	LYH30419-001A	←
SLIT WASHER	425	YQ44246	←	←	925	←	←
TU BRAKE ASSY	428	LY42016-001B	←	←	928	LYH40270-001A	←
SLIT WASHER	429	YQ44246	←	←	929	←	←
TENSION CONTROL LEVER ASSY	430	LY41959-001B	←	←	930	LY43684-001A	←
CENTER GEAR	431	LY31525-001B	←	←	931	LY32861-001A	←
PINCH ROLLER ARM FINAL ASSY	432	LY31516-001E	←	LY31516-001F	932	←	←
SLIT WASHER	433	YQ44246	←	←	933	←	←
TENSION CONTROL PLATE ASSY	434	LY41956-001C	←	←	934	LY43681-001A	←
BRAKE CONTROL LEVER ASSY	435	LY41962-001B*	LY41962-001C	←	935	LY43687-001A	←
MOTOR BRACKET ASSY	436	LY20525-002C	←	←	936	LYH30421-001A	←
LOADING MOTOR	436A	QAR0138-001	←	←	936A	←	←
TAPPING SCREW,x2	436B	LY41940-001A	←	←	936B	←	←
MINI SCREW,x3	437	YQ43893	←	←	937	←	←
GUIDE RAIL ASSY	438	LY20528-001R*	LY20528-001U	←	938	LYH30422-001A	←
MINI SCREW	439	YQ43893	←	←	939	←	←
SLIT WASHER,X2	440	YQ44246	←	←	940	←	←
SLIDE LEVER2 ASSY	441	LY31498-001C	←	LY31498-001D	941	LY32843-001A	←
LOADING PLATE ASSY	442	LY41965-001A	←	←	942	LY43690-001A	←
SLIT WASHER	443	YQ44246	←	←	943	←	←
EJECT LEVER	444	LY31522-001B	←	←	944	LY32858-001A	←
SLIT WASHER	445	YQ44246	←	←	945	←	←
BASE R ASSY	446	LY41929-001E*	LY41929-001F	←	946	LYH40271-001A	←
MINI SCREW	447	YQ43893	←	←	947	←	←
MINI SCREW	448	LY41945-001B	←	←	948	←	←
MODE GEAR	449	LY41930-001A	←	←	949	LY43665-001A	←
ROTARY ENCODER	450	QSW0876-003	←	←	950	←	←
MINI SCREW,X2	451	YQ43893	←	←	951	←	←
GEAR COVER ASSY	452	LY31524-001A	←	←	952	LY32860-001A	←
MINI SCREW,X2	453	YQ43893	←	←	953	←	←
MINI SCREW	454	YQ43893-4	←	←	954	←	←
MAIN CAM ASSY	455	LY41948-001C	←	←	955	LY43676-001A	←
SLIDE ARM ASSY	456	LY41941-001B	←	←	956	←	←
CONNECT GEAR 2	457	LY41951-001B	←	←	957	LY43678-001A	←
SUB CAM ASSY	458	LY41954-001B	←	LY41954-001E	958	←	←
MINI SCREW	459	LY42120-001A	←	←	959	←	←
CONTROL ARM ASSY	460	LY41952-001A	←	←	960	LY43692-001A	←
REEL GEAR 1	461	LY31523-001B	←	←	961	LY32859-001A	←
DRUM BASE ASSY	462	LY31508-002A*	LY31508-002B	LY33372-001A	962	LY31508-002B	←
SCREW,X3	463	QYSPSPU1425M	←	←	963	←	←
CAPSTAN MOTOR	464	QAR0142-001	←	←	964	←	←
MINI SCREW	465	YQ43893	←	←	965	←	←
MAIN DECK ASSY	466	LY10210-001D*	LY10210-001G	←	966	LY10367-001D*	LY10367-001E
SLIT WASHER	476	YQ44246	←	←	976	←	←
SLIT WASHER	477	-	-	-	977	YQ44246-6	-
WASHER	478	-	-	-	978	LY42047-005A	←
SPACER	479	-*	LY43987-001B	←	979	←	←

NOTE:

MARK ← is same as left.
MARK - is not used.
MARK * reference model was also changed.
MARK ** shows different parts number, depending on models.

3.2 VHS-C MECHANISM ASSEMBLY



Classification	Part No.	Symbol in drawing
Grease	KYODO-SH-JB	AA
Oil	YTU94027	BB

NOTE: The section marked in **AA** and **BB** indicate lubrication and greasing areas.

Fig.3-2-1

3.2.1 VHS-C MECHANISM ASSEMBLY PARTS LIST

- Since parts numbers described here are the numbers at the time of manualissue, they are subject to change without notice. Therefore, be sure to see a parts list in the service manual of each model as for parts numbers.

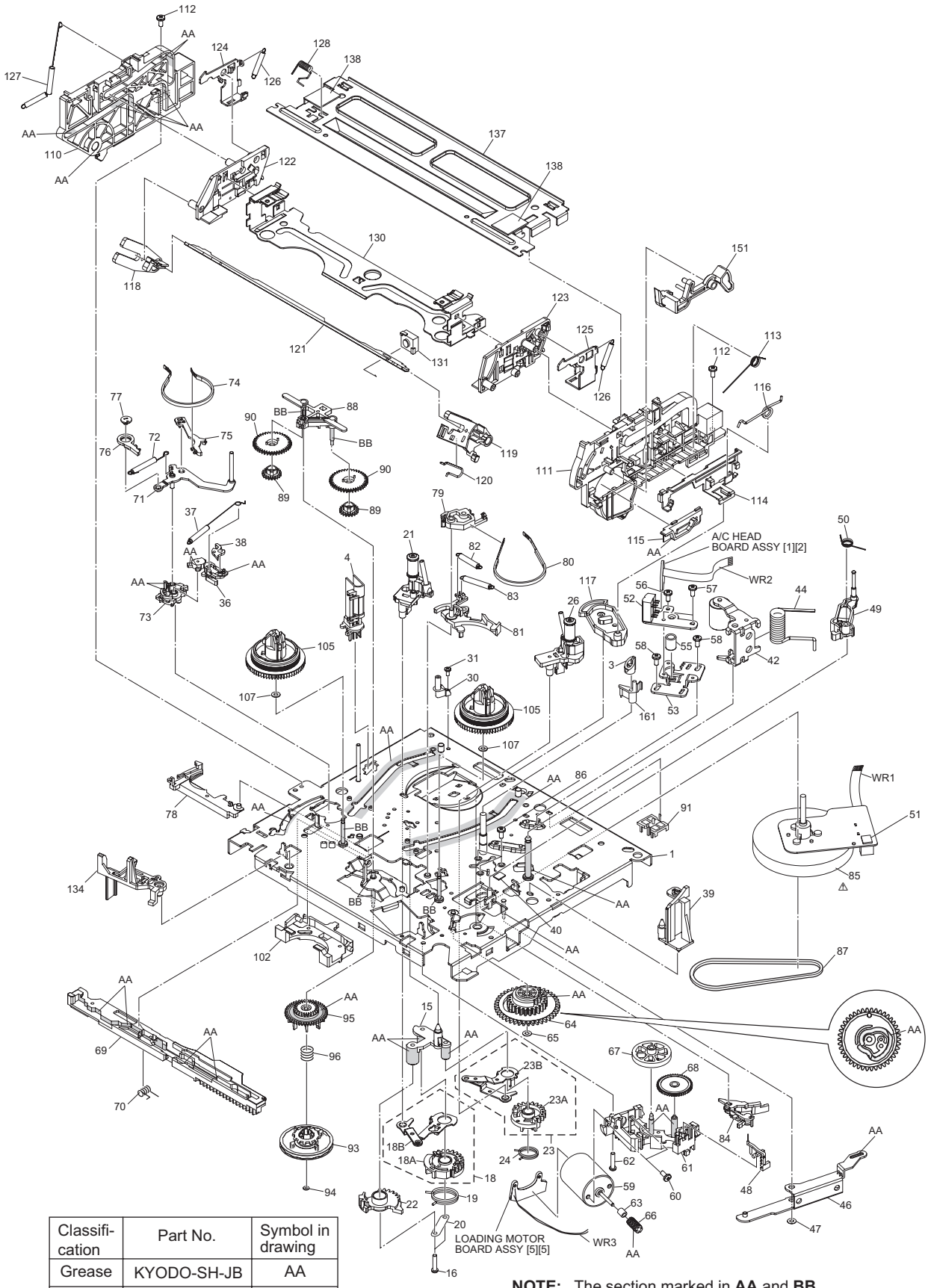
Part Name	Symbol No.	Part No.	Part No.	Part No.	Part No.	Part No.
MECHA(B) ASSY	400	YMA0033A-E	YMA0042A-E	YMA0034A-E	YMA0036A-E	YMA0040A-E
MAIN DECK ASSY	401	LY20612-001B	←	←	←	←
CASSETTE GUIDE (LEFT)	402	LY31817-001A	←	←	←	←
SW LEVER (LEFT)	403	LY31815-001A	←	←	←	←
TORSION SPRING	404	LY42581-001A	←	←	←	←
SCREW	405	LY42722-001A	←	←	←	←
CASSETTE GUIDE ASSY(RIGHT)	406	-	-	YQ44339A-7	←	←
SW.LEVER(RIGHT)	406A	-	-	YQ32162-1-3	←	←
TORSION SPRING	406B	-	-	YQ44340-1-4	←	←
SCREW	407	-	-	LY42819-001A	←	←
MOTOR BRACKET ASSY	408	LY31826-001A	←	←	←	←
WORM BRACKET	409	YQ20793	LY20951-001A	YQ20793	←	LY20951-001A
SCREW,X3	410	LY42722-001A	←	←	←	←
WHEEL GEAR	411	LY31925-001A	←	←	←	←
MIDDLE GEAR	412	LY42730-001A	←	←	←	←
CANCEL LEVER ASSY	413	LY42521-001A	←	←	←	←
SLIT WASHER,X2	414	LY42754-003A	←	←	←	←
CONTROL CAM	415	YQ20827-2-1	←	←	←	←
SLIT WASHER	416	PQM30017-25	←	←	←	←
LOADING GEAR(T)ASSY	417	LY42733-001A	←	←	←	←
SLIT WASHER	418	LY42754-003A	←	←	←	←
LOADING GEAR(S)ASSY	419	LY42732-001A	←	←	←	←
SLIT WASHER	420	LY42754-003A	←	←	←	←
COVER PLATE	421	LY42403-001A	←	←	←	←
LOADING RING ASSY	422	LY42452-001A	←	←	←	←
SCREW,X4	423	LY42728-001A	←	←	←	←
GUIDE RAIL	424	LY10239-001A	←	←	←	←
SCREW,X8 or X7	425	LY42728-001A,(X8)	←,(X7)	←,(X8)	←,(X8)	←,(X7)
POLE BASE(S)ASSY	426	LY30161-001B	←	←	←	←
POLE BASE(T)ASSY	427	LY30162-002A	←	←	←	←
DRIVE LEVER ASSY	428	LY42523-001A	←	←	←	←
SLANT ARM ASSY	429	LY42545-001B	LY44000-001B	LY42545-001B	←	LY44000-001B
TORSION SPRING(S)	429A	LY42547-001A	LY43992-001A	LY42547-001A	←	LY43992-001A
SLIT WASHER	430	LY42754-003A	←	←	←	←
ROLLER BASE ASSY	431	LY42739-003A	←	←	←	←
SCREW	432	LY42722-001A	←	←	←	←
LINK ARM ASSY	433	LY42494-001A	←	←	←	←
SLIT WASHER	434	PQM30017-25	←	←	←	←
PINCH ROLLER ARM ASSY	435	LY40018-002A	←	←	LY40018-005A	←
SLIT WASHER	436	PQM30017-25	←	←	←	←
TAKE UP GUIDE ARM ASSY	437	LY42541-001B	←	←	←	←
SLIT WASHER	438	LY42754-003A	←	←	←	←
TENSION ARM ASSY	439	LY42571-001A	←	←	←	←
TENSION SPRING	439A	LY42669-001A	←	←	←	←
SLIT WASHER	440	LY42754-003A	←	←	←	←
MOTOR BASE	441	YQ20797-1-5	←	←	←	←
SCREW,X2	442	LY42722-001A	←	←	←	←
SCREW	443	YQ44460	←	←	←	←
CAPSTAN MOTOR	444	QAR0212-001	QAR0212-002	QAR0212-001	QAR0212-002	←
TAPPING SCREW,X3	445	YQ44304	←	←	←	←
SLANT POLE BASE ASSY	446	LY42731-001A	←	←	←	←
TAPPING SCREW	447	YQ44304	←	←	←	←
TIMING BELT	448	YQ43710-2	←	←	←	←
CENTER PULLEY UNIT	449	LY42678-001A	←	←	←	LY42678-003A

Part Name	Symbol No.	Part No.	Part No.	Part No.	Part No.	Part No.
SCREW,X2	450	LY42722-002A	←	←	←	←
SUPPLY CLUTCH ASSY	451	LY42670-001A	←	←	←	←
SLIT WASHER	452	LY42754-003A	←	←	←	←
REEL DISC	453	YQ31861-1-7	←	←	←	←
WASHER	454	LY42755-001A	←	←	←	←
TAKE UP GEAR	455	LY31924-001A	←	←	←	←
BRAKE SUB GEAR	456	LY42738-001A	←	←	←	←
SLIT WASHER,X3	457	LY42754-003A	←	←	←	←
A/C HEAD UNIT	458	LY42544-001B	LY42544-002A	LY42544-001B	←	LY42544-002A
SCREW,X2	459	SPSN1750Z	←	←	←	←
EJECT LEVER ASSY	460	LY42517-001A	←	←	←	←
SLIT WASHER	461	LY42754-003A	←	←	←	←
LED GUIDE	462	YQ31833-1-1	←	←	←	←
SCREW	463	LY42722-001A	←	←	←	←
DRUM SPACER	464	LY42729-001A	←	←	←	←
SCREW,X2	465	LY42722-001A	←	←	←	←
ROTARY ENCODER	466	QSW0888-001	←	QSW0888-002	←	←
SCREW,X4	467	LY42722-002A	←	←	←	←
LINK LEVER	468	LY31814-001A	←	←	←	←
DRUM FINAL ASSY	469	**	**	**	**	**
CATCHER	469A	YDM1003-1-5	←	←	←	←
SCREW,X2	469B	QYSPSPU1735M	←	←	←	←
SCREW,X2	470	LY42722-001A	←	←	←	←
SCREW,X2	471	SPSH1740Z	←	←	←	←
BRUSH	472	LY43542-001A	←	←	←	←
SCREW	473	LY42722-003A	←	←	←	←
CASSETTE HOUSING FINAL ASSY	*155/481	LY31808-001C	LY31808-002C	LY31808-001C	LY31808-001D	LY31808-002C
SCREW,X4	*156/482	LY42722-003A	←	←	←	←
BRACKET(MECHA)	*161/484	LY32326-001A	←	←	←	←
SCREW,X2	*162/485	LY42722-003A	←	←	←	←
SIDE BRACKET L	*164/487	LY31807-001A	←	←	←	←
SCREW	*165/488	LY42722-003A	←	←	←	←

NOTE:

MARK ← is same as left.
MARK - is not used.
MARK * are shown in the parts list of FINAL ASSY of service manual of each model.
MARK ** shows different parts number, depending on models.

3.3 VHS MECHANISM ASSEMBLY



Classification	Part No.	Symbol in drawing
Grease	KYODO-SH-JB	AA
Oil	COSMO-HV56	BB

NOTE: The section marked in **AA** and **BB** indicate lubrication and greasing areas.

Fig.3-3-1

3.3.1 VHS MECHANISM ASSEMBLY PARTS LIST

- Since parts numbers described here are the numbers at the time of manualissue, they are subject to change without notice. Therefore, be sure to see a parts list in the service manual of each model as for parts numbers.

System		VHS		S-VHS	
**Job No.		V15D Series	V16D Series	V15S Series	V16S Series
Part Name	Symbol No.	Part No.	Part No.	Part No.	Part No.
MAIN DECK ASSY	1	LP21039-001N	LP21039-001S	LP21039-001R	LP21039-001S
GUIDE POLE CAP	3	LP40097-002D	←	←	←
FULL ERASE HEAD	4	QAH0082-001	←	←	←
LOAD.GEAR BASE	15	LP30958-001B	←	←	←
SCREW,X2	16	QYTPST2620Z	←	←	←
LORD.GEAR(SUPPLY) ASSY	18	LP40798-001A	←	←	←
LORD.GEAR(SUPPLY)	18A	LP21040-001A	←	←	←
LORD.ARM(SUPPLY) ASSY	18B	LP40799-001A	←	←	←
TORSION SPRING(SUPPLY)	19	LP40837-001A	←	←	←
FIXING PLATE	20	LP40903-001A	←	←	←
POLE BASE ASSY(SUPPLY)	21	LP40806-001D	←	←	←
LOAD GEAR	22	LP30959-002A	←	←	←
LORD. GEAR(TAKE UP) ASSY	23	LP40802-001B	LP40802-001C	LP40802-001B	LP40802-001C
LORD. GEAR(TAKE UP)	23A	LP21041-001B	LP21041-001C	LP21041-001B	LP21041-001C
LORD.ARM(TAKE UP) ASSY	23B	LP40803-001A	←	←	←
TORSION SPRING(TAKE UP)	24	LP40838-001A	←	←	←
POLE BASE ASSY(TAKE UP)	26	LP40808-001F	LP40808-001E	←	←
ARM BASE	30	-	←	LP31020-004A	←
SCREW	31	-	←	QYTDST2606Z	-
TU LEVER	36	LP21055-001E	←	←	←
TENSION SPRING	37	LP40943-001A	←	←	←
T-UP HEAD	38	LP40859-001D	←	←	←
LID GUIDE	39	LP30961-001C	←	←	←
SPACER	40	LP30002-0B7A	←	←	-
PINCH ROLLER ARM ASSY	42	LP40810-001A	←	←	←
TORSION SPRING	44	LP40840-001C	LP40840-001D	←	←
PRESS LEVER	46	LP30963-001B	←	←	←
SLIT WASHER	47	PQM30017-24	←	←	←
S-SWITCH	48	-	←	LP40930-002E	←
GIDE ARM ASSY	49	LP40813-001D	←	←	←
TORSION SPRING	50	LP40841-001A	←	←	←
SPACER	51	LP30002-090A	←	←	-
A/C HEAD	52	QAH0081-001	←	←	←
HEAD BASE	53	LP30965-001A	←	←	←
COMPRESSION SPRING	55	LP40842-001A	LP40842-001D	LP40842-001A	LP40842-001D
SCREWX1 A/C HEAD	*56	QYTDST2006M	←	←	←
A/C HEAD SCREW,X2	*57	LP41036-001A	←	←	←
SCREW,X2 A/C HEAD	*58	QYTDST2606Z	←	←	←
LOADING MOTOR	59	QAR0023-001	←	←	←
SCREW,X2	60	QYTPSP3003Z	←	←	←
MOTOR BRACKET	61	LP21056-002F	LP21056-002G	←	←
TAP SCREW	62	QYTPST2620Z	←	←	←
WORM BEARING	63	LP40814-001B	←	←	←
CONTROL CAM	64	LP21044-001D	←	←	←
SLIT WASHER	65	PQM30017-24	←	←	←
WORM GEAR	66	LP40815-001A	←	←	←
HELICAL GEAR	67	LP40816-001B	←	←	←
CONNECT GEAR	68	LP40817-001A	←	←	←

System		VHS		S-VHS	
**Job No.		V15D Series	V16D Series	V15S Series	V16S Series
Part Name	Symbol No.	Part No.	Part No.	Part No.	Part No.
CONTROL PLATE	69	LP10400-001H	←	←	LP10400-001J
TORTION SPRING	70	LP40843-001A	←	←	←
TENSION ARM ASSY	71	LP40818-001B	←	←	←
TENSION SPRING	72	LP40844-001C	LP40844-001E	LP40844-001D	LP40844-001E
TENSION ARM BASE	73	LP21045-001D	←	←	←
TENSION BAND ASSY	74	LP40821-001A	←	←	←
BAND HOLDER-1	75	LP30967-001B	←	←	←
BAND HOLDER-2	76	LP30968-001C	←	←	←
ADJUST PIN	77	LP40822-002B	←	←	←
TENSION ARM LEVER	78	LP31000-005E	←	←	←
MAIN BRAKE(TAKE UP)	79	LP21046-001C	←	←	←
BAND BRAKE ASSY	80	LP40824-001A	←	←	←
BRAKE LEVER	81	LP30969-002A	LP30969-002B	LP30969-002A	LP30969-002B
TENSION SPRING	82	LP30003-033B	←	←	←
TENSION SPRING	83	LP30003-035B	←	←	←
CAPSTAN BRAKE ASSY	84	LP40825-001B	←	←	←
CAPSTAN MOTOR	85	QAR0204-002	←	←	←
SCREW,X3 CAPSTAN MOTOR	86	QYTPSG2606M	QYTPSG2606Z	QYTPSG2606M	QYTPSG2606Z
BELTCAPSTAN MOTOR	87	LP30005-010A	←	←	←
IDLER ARM	88	LP30970-001A	←	←	←
IDLER GEAR 1,X2	89	LP40828-004A	←	←	←
IDLER GEAR 2,X2	90	LP40829-001B	LP40829-002A	LP40829-001B	LP40829-002A
WIRE HOLDER	91	LP31014-001A	←	←	←
CLUTCH UNIT	93	LP40934-001B	←	←	←
SLIT WASHER	94	PQM30017-47	←	←	←
DIRECT GEAR	95	LP30973-001A	←	←	←
COMPRESS. SPRING	96	LP40939-001A	←	←	←
CHANGE LEVER	102	LP30974-001B	←	←	←
REEL DISK,X2	105	LP21049-001A	←	←	←
SPACER,X2	107	LP30017-004A	←	←	←
SIDE FRAME(L)	110	LP10401-001F	LP10401-001H	LP10401-001F	LP10401-001H
SIDE FRAME(R)	111	LP10402-001F	LP10402-001K	LP10402-001G	LP10402-001K
SCREW,X2	112	QYTDST2606Z	←	←	←
TORSION SPRING	113	LP40917-001C	LP40917-001D	←	←
SIDE PLATE	114	LP30976-001D	LP30976-001E	←	←
LIMIT PLATE	115	LP30977-002D	←	←	←
LIMIT SPRING	116	LP40846-001C	←	←	←
DRIVE LEVER	117	LP31100-001B	←	←	←
DRIVE ARM(L)	118	LP30978-001B	←	←	←
DRIVE ARM(R)	119	LP30979-001H	LP30979-001N	LP30979-001H	LP30979-001N
TORSION SPRING	120	LP40847-001B	←	←	←
CONNECT PLATE	121	LP30980-001A	LP30980-001E	LP30980-001B	LP30980-001E
SIDE HOLDER(L)	122	LP10403-001C	←	←	←
SIDE HOLDER(R)	123	LP10404-001D	LP10404-001E	←	←
LOCK LEVER(L)	124	LP30983-001A	LP30983-001B	LP30983-001A	LP30983-001B
LOCK LEVER(R)	125	LP30984-001A	LP30984-001B	LP30984-001A	LP30984-001B
TENSION SPRING,X2	126	LP40924-001C	LP40924-001D	←	←
EARTH SPRING(1)	127	LP40856-001A	←	LP40856-001B	LP40972-001A
EARTH SPRING(2)	128	LP40857-001B	←	←	←
C.HOLDER ASSY	130	LP30981-001E	LP30981-001G	LP30981-001F	LP30981-001G
C.H STOPPER	131	LP31135-001A	-	LP31135-001A	-

System		VHS		S-VHS	
**Job No.		V15D Series	V16D Series	V15S Series	V16S Series
Part Name	Symbol No.	Part No.	Part No.	Part No.	Part No.
R.SAFETY LEVER	134	LP21051-002C	←	←	←
TOP FRAME	137	LP21052-001F	LP21052-001J	LP21052-001H	LP21052-001J
SPACER	138	LP30002-0A7A	-	LP30002-0A7A	-
DOOR OPENER	151	LP30985-001G	←	←	←
TAPE GUIDE	161	-	LP40993-001A	-	LP40993-001A
E-CARD WIRE DRUM.M	WR1	WJT0059-001C	WJT0059-001E	WJT0059-001D	WJT0059-001E
E-CARD WIRE AC HEAD CN2001	WR2	WJT0067-001B	←	←	←
E-FL/RB WIRE LOADING MOTOR	WR3	WJS0022-001A	←	←	←
MEMO	-	PMD0035B-C	PMD0040A-C	PMD0036B-C /PMD0039A-C	PMD0037A-C /PMD0041A-C

NOTE:

MARK ← is same as left.
MARK - is not used.
MARK * shows that Symbol No. and Parts No. may sometimes be different from those in each manual. See the table below for final Symbol No. and Parts No.
MARK ** is Job No.
To identify a model, see the Job No. of the model.
Job No. is shown just above the service manual number at the lower right of the service manual of each model.